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The Australasian Journal of Pharmacy

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THE OFFICIAL FEDERAL JOURNAL of the ASSOCIATED PHARMACEUTICAL ORGANISATIONS of AUSTRALIA

OFFICIAL JOURNAL OF THE PHARMACEUTICAL SOCIETY OF NEW ZEALAND

New Series: Vol. 33—No. 393. SEPTEMBER 30, 1952. Old Series: Vol. LXVII—No. 801.

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OFFICIAL ANNOUNCEMENTS

PHARMACY BOARD OF VICTORIA

EXAMINATION DATES 1952.

Preliminary Examination—November 19-24.

Intermediate Examination—November 11-20.

Final Examination—November 24-December 4.

Entries for the Preliminary and Intermediate Examinations close fourteen days, and for the Final Examination twenty-one days, before the date of commencement of the Examination.

Full details obtainable from the office of the Board.

F. C. KENT, Registrar.

360 Swanston Street,
Melbourne.

PHARMACY BOARD OF N.S.W.

The next Qualifying Examination will be held in February, 1953.

Watch this column for further advice.

5th Floor,
Winchcombe House,
52 Bridge Street,
SYDNEY.

P. E. COSGRAVE,
Registrar.

PHARMACEUTICAL DEFENCE LIMITED

ANNUAL ELECTION

It is hereby notified that an ELECTION will be held to fill TWO ORDINARY VACANCIES on the Board of Directors of Pharmaceutical Defence Limited and to elect AUDITORS on the 26th day of November, 1952. The Directors who retire by rotation are Ernest Wharton Braithwaite and Brydie Loveday Warner. Monday, the 3rd day of November, 1952, has been appointed as the day of nomination. Nomination papers of candidates for the offices of Director or Auditors must be lodged or delivered by post with the Secretary at the registered office of the Company, 360 Swanston Street, Melbourne, before 4 o'clock in the afternoon of the day fixed for nomination. In the event of more candidates being nominated than there are vacancies, a POLL will be taken on the 26th day of November, 1952.

T. G. ALLEN, Secretary.

Melbourne, September 30, 1952.

INDEX TO ADVERTISERS

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"The Sulphonamides" by Hawking and Lawrence, 1950 edition, p. 122.

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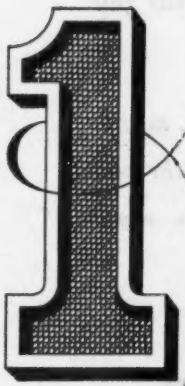

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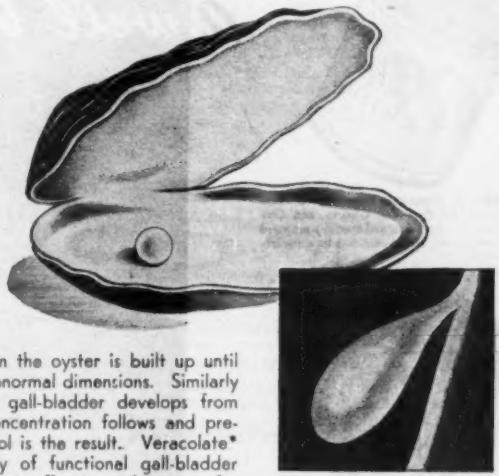

Slowly the pearl within the oyster is built up until the growth assumes abnormal dimensions. Similarly the gall-stone in the gall-bladder develops from stagnation of bile; concentration follows and precipitation of cholesterol is the result. Veracolate* brings to the therapy of functional gall-bladder disorders the two most effective substances for keeping the bile freely flowing: sodium salts of taurocholic and glycocholic acids.

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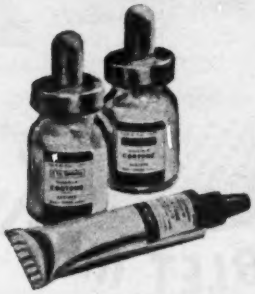

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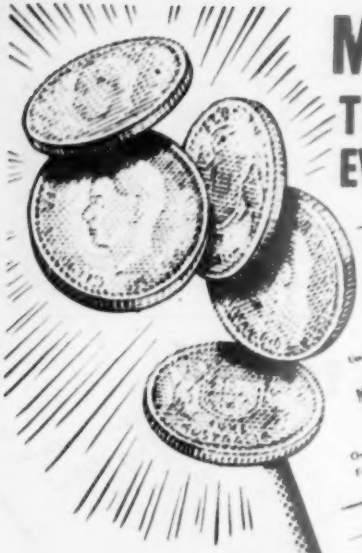

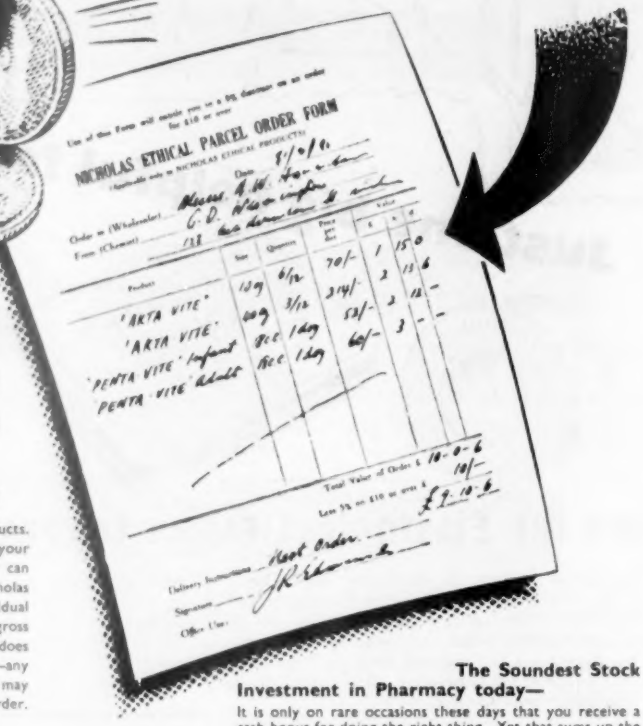

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New Series: Vol. 33—No. 393
Old Series: Vol. LXVII—No. 801
September 30, 1952

THE SCIENCE CONGRESS

This issue of the Journal is largely devoted to publication of papers read in Section "O" (Pharmaceutical Science) of the Australian and New Zealand Association for the Advancement of Science, which met in Sydney from August 20-27.

Most readers will know that in the past it has been customary for the Pharmaceutical Association to hold its biennial meetings in conjunction with the Science Congress, thereby enabling representatives from all States of the Commonwealth to join in discussions of problems of organisation, legislation, etc., and at the same time enjoy the privilege of participating in the meetings of the Science Association. This procedure, however, was not followed on this occasion. The last meeting of the Association was held in Brisbane in August, 1951, and the Committee of Management felt that the expense and work involved in organising another meeting so shortly afterwards was not justified. The next meeting of the Association is to be held in Sydney in August, 1953, and again will be conducted apart from the Science Association meeting, which is scheduled for January, 1955, in Melbourne.

It is interesting to recall that in the earlier Pharmaceutical Conferences papers and discussions on both technical and business subjects were included in the one programme. The Pharmaceutical Conference in those days consisted of two sections, which were designated the "Practice Section" and the "Science Section." All members attending the Conference would sit for discussions in both sections.

At the first meeting held, in Brisbane in 1909, questions of general interest, such as reciprocity between the States, pharmaceutical curricula, etc., were discussed, and papers were presented on subjects such as "The Influence of Certain Drugs on Digestive Processes," "Euphorbia Pilulifera — a Queensland Asthma Plant," "Acetanilide as a Preservative for Hydrogen of Peroxide."

Later a link with the Australian Association for the Advancement of Science was established, when Pharmaceutical Science became a sub-section of Section "B" —Chemistry. This brought the profession of pharmacy into much closer liaison with other sciences represented in the main Association, and proved of value to the profession. In 1926 pharmacy was elevated to the status of a full section after Mr. A. T. S. Sissons had successfully moved, and Mr. F. P. Gulley had supported, a motion presented to the Council of the Association that:—

> "The present sub-section B (2) be made a separate section of the Association to be known as Pharmaceutical Science — Section 'O'."

The late Edward Mayhew, whose outstanding personality dominated pharmacy in Western Australia for very many years, was the first President of Section "O.". In the course of his Presidential address in 1928 he said:—

> "The progress of pharmacy in the past has been due to the experimentalists in the profession. For its continued progress it must depend on individuals similarly imbued with the spirit of research, and be conducted on broad lines as is the tendency in regard to education in Australia at the present time. The modern research worker in pharmacy should be familiar with the methods employed by workers in other branches of science, as well as with the methods and peculiar needs of pharmacy."

It is perhaps not surprising that the average pharmaceutical chemist, absorbed as he is with his professional and business activities, should take but passing interest in the proceedings of the Science Section. Admittedly comparatively few members can devote all of their time to scientific enquiry and research, but this fact does not minimise the importance of that section of the work.

The value of the research worker's contribution to the progress and prosperity of pharmacy should not be under-estimated. Reports of research projects, papers and discussions on topics coming within the ambit of Pharmaceutical Science at section meetings have sometimes been spoken of as "highbrow" or regarded as "above the heads of the average chemist." Perusal of the reports of proceedings of Section "O," however, indicates that many papers of an extremely practical nature have been presented and discussed at meetings. The work, which is constantly being undertaken by individuals and within the teaching institutions and research laboratories, is vital, and, without it, pharmacy, if it still survived, would not enjoy the status it does.

Section "O," therefore, deserves the interest and support of rank and file. Those responsible for the organisation of the Section, and the workers who contribute to the programmes should be encouraged in their works.

Educational and technical problems are the province of Section "O." The day has long passed when these subjects can be classed unimportant. No longer can the practising pharmacist disregard the march of scientific progress nor can he afford to concentrate much of his energies as did his forefathers on trivialities such as label trimming and cork tying; no longer is the professional work of the pharmaceutical chemist strictly confined to the compounding of doctor's prescriptions. If pharmacy is to survive and prosper the individual members must keep themselves well informed of every advance in the field of pharmaceutical science, particularly in relation to the new medicaments which are forever being introduced, their uses, properties, effects, etc.

THE MONTH

GOODWILL AND TAXATION

After the Budget Debate in the House of Representatives during August, the Committee of the Trade Associations' Federal Taxation Defence Council, following a meeting in Melbourne, approached the Commonwealth Treasurer, Sir Arthur Fadden, with a view to the amending law being made effective as from September 30, 1952, instead of the end of the year.

Sir Arthur Fadden replied to the Secretary of the T.A.F.T.D.C., under date September 10, 1952, as follows:

"I have been considering your recent letter conveying the suggestion of your Association that the proposed amendments to those provisions of the income tax law relating to the taxation of goodwill should operate as from September 30, 1952, instead of December 31, 1952, as announced in my Budget Speech.

"The proposed commencing date—December 31, 1952—was adopted by the Government to conform, broadly, with a recommendation by the Commonwealth Committee on Taxation that the amendment should operate from a date approximately two months after the date on which it becomes law. The Committee's report was tabled in Parliament on August 12, 1952. Although the date of assent of the amending Bill cannot confidently be forecast at this stage, it is probable that, allowing two months' notice, December 31, 1952, will not be far beyond the date suggested by the Committee.

"As indicated in the Budget Speech, it is desirable to give reasonable notice of the amendment, in order that vendors and purchasers of goodwill associated with leasehold business premises may have the opportunity of becoming familiar with the altered law prior to its operation.

"It cannot be overlooked that, under the present law, the taxation of the vendor of the goodwill is linked with the allowance of deductions to the purchaser of that goodwill.

"Under the proposed law, if the parties to the sale of goodwill do not come to a specific agreement as to the tax consequences of their transaction, the liability of both will be affected. The vendor will be relieved of taxation on the amount received, but, on the other hand, the purchaser will deprive himself of a deduction to which he would otherwise be entitled.

"It appears to me that the adoption of December 31, 1952, as the commencement date of the new provision will not cause all disposals of businesses on leased premises to be held over until after that date. Those vendors who are willing to be assessed on the sale price of goodwill will not be affected by the amending legislation.

"On the other hand, if a prospective vendor is anxious to take advantage of the amending legislation, it is important that the prospective purchaser in that transaction should have adequate opportunity of becoming aware that, by agreeing to the vendor's proposal, he will forgo the deduction for the purchase price paid by him.

"Whilst I have given the representations of your Association in this matter very careful consideration, the conclusion reached is that the proposed commencing date for the operation of the amending law could not be brought forward to September 30 without prejudicing purchasers who might unwittingly forgo the deduction of the purchase price.

"In these circumstances I find myself unable to support the proposal advanced by you on behalf of your Association."

NEW POISONS ACT FOR NEW SOUTH WALES

It was announced during the month that State Cabinet had decided to amend the New South Wales Poisons Act and set up a Poisons Advisory Committee.

The Premier, Mr. Cahill, stated that the Committee would be representative of all interests. It would include the Senior Medical Officer of Health, the Government Analyst, the Chief Veterinary Surgeon and a representative of the Department of Agriculture, as well as representatives of the University, the B.M.A., Pharmacy Board, Chamber of Commerce and Chamber of Manufactures.

This move is very much overdue, and it is to be hoped that due provision will be made for the control of potentially dangerous drugs by limiting supply to prescription, which is now done in all of the other States. One report indicates that the sale of poisons by automatic machines will be prohibited.

SUPPLY OF RECTIFIED SPIRIT TO RETAIL CHEMISTS

Advice has been received in a letter dated September 26, from the Collector of Customs, Victoria, Department of Trade and Customs, Customs and Excise Office, Flinders street, Melbourne, that on and from January 1, 1953, supplies of rectified spirits may be obtained by retail chemists from wholesalers subject to the following conditions:—

(a) To a maximum of two (2) gallons per month without security.

(b) In quantities exceeding two (2) gallons but not more than five (5) gallons per month by permission and on the provision of security to the Customs Department in an amount of fifty pounds (£50).

(c) Prior to the delivery of any rectified spirit after January 1, 1953, the retail chemist must have nominated in writing to the Collector of Customs, Customs House, in the capital city of the retailer's own State, the monthly quantity desired and the name of the supplier.

NEW SOUTH WALES PHARMACY ACT

Date of Introduction of Apprenticeship Changes.

The N.S.W. Government recently amended the Pharmacy Act to provide:—

(1) That students may become apprenticed to chemists whose places of business are within the Australian Capital Territory. (Previously this was not possible.)

(2) That, commencing with the Qualifying Examina-

tion now in progress, the examiners shall be appointed by the Senate of the University of Sydney. (In all other respects the physical conduct of the Examination will be as previously.)

(3) **As and from a date to be proclaimed by the Government in due course,** apprenticeships will no longer be the method of entry to the pharmaceutical profession.

We have been advised by the Pharmacy Board of N.S.W. that until such time as the Government takes this action, therefore, new apprenticeships may be arranged, and will be served in accordance with the terms of the apprenticeship indentures. It is anticipated that current arrangements will continue to operate during 1953.

The Board states that the new course, **when it does come into effect,** will not alter the conditions of apprenticeships already operating. Students wishing to do pharmacy should therefore follow the procedure which has operated for many years, and make all enquiries direct to the Board.

STUDENTS TO MEET AT POINT LONSDALE

The National Union of Pharmaceutical Students of Australia will meet in conference at Point Lonsdale, Victoria, from January 3, 1953.

Local Congress Secretaries have been appointed in each State, and details may be obtained by interested students from them or the N.U.P.S.A. Executive member in each State.

Business will be combined with recreation as in previous Student Conference Camps.

N.U.P.S.A. has been fortunate in obtaining the use of the Toc H. Association facilities at Point Lonsdale, and all visitors to the Conference should be very comfortable. Further details of the arrangements are to be found in the Students' Section of the July issue of the Journal.

PROPOSED WORLD UNIFORMITY FOR LABELLING OF POISONS

A communication received from the International Labour Organisation, Geneva, Switzerland, a specialised agency associated with the United Nations, indicates that the organisation has proposed that dangerous substances be labelled uniformly throughout the world with the object of reducing hazards in handling them.

Five main categories of substances fall within the suggestions, namely explosive, inflammable, toxic, corrosive and radio-active.

It is proposed that strikingly designed wordless labels be used so that even illiterate workers could understand them. Symbols suggested are an exploding grenade for explosive substances, a lighted match for inflammable substances, a skull for toxic substances, a corroded hand for corrosive substances, and a skull and crossbones against a radiant "R" for radio-active substances.

The proposed labels are rectangular, in white and orange.

The recommendations contained in the study were to be considered by the I.L.O. Chemical Industries Committee during September.

SYNTHETIC DETERGENTS IN MEDICAL TREATMENT

The question of possible danger from the use of synthetic detergents in medical practice was raised in the Commonwealth Parliament by Senator Byrne on May 29.

Senator Cooper's reply on August 6, furnished by the Minister of Health, Sir Earle Page, was as follows:

The special "soapless" cleansing preparations—synthetic detergents—that are now being used are complex organic compounds. Like soaps, they act by lowering the surface tension of water, and they assist its cleansing action. They also have certain advantages over soaps, e.g. they can be used satisfactorily in hard waters, and since they are not alkaline, and are free from irritating fatty acids, they will not irritate the skin in the same way that soap does, although it is possible they may irritate the skin in some other way. According to reports, some of these detergents give good indications of being less irritating to some skins than is soap.

The question whether synthetic detergents have a carcinogenic action on the skin has been discussed with prominent dermatologists and other medical specialists in Sydney and with representatives of two large soap manufacturing firms. A search has also been made of the relevant medical literature available at the School of Public Health and Tropical Medicine, Sydney. There is no information from any of these sources to indicate that the use of synthetic detergents is associated with the risk of cancer of the skin, and no indication from the medical practitioners consulted that they believe such an association to be likely.

Most of the synthetic detergents used in Australia are imported, and include preparations named Teepol, Pref, Kwit, Santomerse and Lissapol. Some of these compounds have been used for several years in industrial skin cleansers, particularly in the United States of America. They are especially suitable for workers who are sensitive to the usual soaps, or to alaklies, or who are affected with dermatitis, and have been recommended by authorites such as Dr. Louis Schwartz, until recently Chief Dermatologist to the United States Public Health Service,

P.D.L. WARNING No. 13.

PAY ROLL TAX

Liability to Pay Roll Tax is a responsibility which is sometimes overlooked by chemists.

Any employer who pays wages totalling £20 per week or more must register for Pay Roll Tax. Failure to do so renders him liable to penalty.

Registration is also required if it is found that wages paid for the year ended June 30, 1952, totalled more than £1040.

and by the Committee on Occupation Dermatoses of the American Medical Association. It is hardly likely that their use in skin cleansers would be advocated if there were any suspicion of a carcinogenic effect.

In "Medical Uses of Soap," edited by Morris Fishbein (1945), at that time editor of the "Journal of the American Medical Association," it is stated, at page 162, that materials in the group of sulphonated alkylated aromatic hydrocarbons have been used as household and industrial detergents—Aliwol, Savex, Swerl—and that "no published reports have come to our attention showing the action of these substances on the skin when they get into contact with the skin in connection with their use as household detergents."

In view of the information thus elicited, the honourable Senator might care to let me have the reference on which he based his question, in order that further enquiries might be pursued.

A VETERAN PASSES ON

Pharmacists in all parts of Australia will regret to learn of the death of Mr. Reginald C. Rutter in America during the month.

Mr. Rutter was for many years a dominating figure in Australian pharmaceutical politics. One of our most vigorous men, he played a leading part in the organisation of the Guild, being President of the Queensland State Branch Committee for many years. Mr. Rutter was a past president of the Pharmaceutical Association of Australia and New Zealand and actively associated with every official pharmaceutical body in Queensland.

Mr. Rutter, together with Mrs. Rutter, were in America, on a visit to their married daughter, and Mr. Rutter had just attended the Centenary Meeting of the American Pharmaceutical Association in Philadelphia as a representative of the Pharmaceutical Society of Queensland. News of his death came as a shock to his many friends in Australia.

BRITISH COMMONWEALTH PHARMACEUTICAL CONFERENCE PROPOSED

The issue of the Pharmaceutical Journal, London, dated August 9, refers to the possibility of a British Commonwealth Conference being held in 1953.

This conference is to be held in London, and the discussion which took place at the meeting of the Council of the Pharmaceutical Society of Great Britain on July 29 and 30 no doubt took up the suggestion made by Mr. Eric Scott when he addressed the meeting of branch representatives at the November Conference in 1952.

With characteristic caution the report states that the Council considered a suggestion that on the occasion of the holding of the British Pharmaceutical Conference in London in 1953, opportunity might be taken to organise a meeting of representative pharmacists from overseas countries of the British Commonwealth to discuss problems of common interest. The Secretary and Registrar was asked to ascertain the views of pharmaceutical bodies in the overseas countries on the proposal.

FEDERATED PHARMACEUTICAL GUILD WITHDRAWS FROM D.A.T.C.

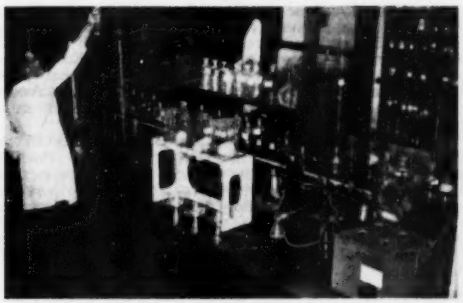
The Federal Council of the Guild has announced withdrawal of the Guild from the Drug and Allied Trades Council. This is not construed to mean that there is any difference of policy between the Guild and that body or that co-operation between the Guild and the Trade will cease to be effective when matters of mutual interest arise.

REPRIEVE FROM DIAMORPHINE?

The symptomatic treatment of coughs often calls for the administration of a sedative, and the drug of choice is usually codeine. The National Formulary, 1952, states (p. 13) that the chief use of this alkaloid is as a depressant to the cough centre, and that it should be given for this purpose in preference to diamorphine. This statement may have been prompted by consideration of the ease with which patients receiving diamorphine are liable to become addicted to the drug, and to the recommendations by the World Health Organisation that a total ban be placed on its manufacture. The National Formulary further states (p. 24) that codeine phosphate, amidone hydrochloride and camphorated tincture of opium are usually effective in suppressing a dry cough.

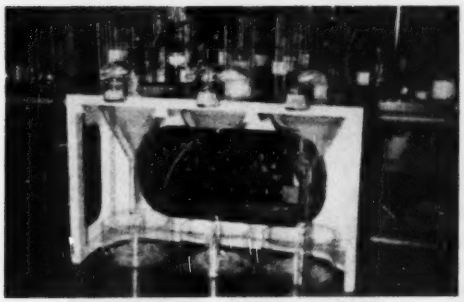
A report from B. P. Hillis, recently published in "The Lancet" (1952, I, 1230), is therefore of particular interest, as it describes an investigation of four cough suppressants in common use, and assesses their relative merits. By using a long nasopharyngeal sprayer, it was possible to produce in one volunteer (who submitted to all of the tests) a range of coughs of increasing intensity. The effect of each drug was measured by counting the coughs before and after administration, allowance being made for the psychological factor. The drugs examined were coedine phosphate, morphine hydrochloride, amidone and diamorphine hydrochloride, and, in order to eliminate the possibility that their cough-suppressant effect might be due to their hypnotic action, several tests were also done with pentobarbitone, but it was found to have no significant effect on coughing. Observations extended over nearly a year, and they showed that codeine phosphate was the least effective of the drugs tested; diamorphine was the most efficient cough-suppressant, morphine had a significant effect, and amidone, despite its tendency to depress respiration and cause nausea, was also valuable. Reports of this type form a valuable contribution to our knowledge of therapeutics and help to eliminate empirical prescribing. It is to be hoped that other workers will undertake similar investigations.—("The Pharmaceutical Journal.")

Some Snapshots Taken at the University of Sydney During the Demonstrations in the Pharmacy Laboratory

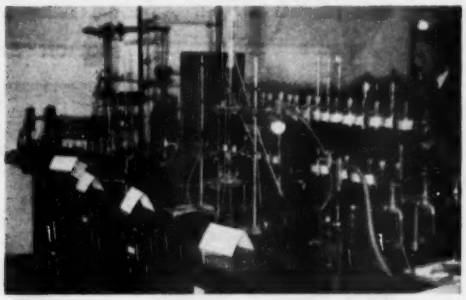


Mr. T. Watson demonstrating hydrogenation apparatus in the research laboratory.

Mr. W. Ferguson using autoclave, Mr. D. Cliff sealing ampoules, Mr. F. Fogerty filling and Mr. W. Anderson washing ampoules.



Close up of metabolism cages for glucoside experiments.



Apparatus for distillation under reduced pressure.

Messrs. E. E. Nye, A. T. Sissons and H. Braithwaite.

Mr. S. E. Wright and Professor R. H. Thorp.

A.N.Z.A.A.S. DIARY

Sydney, 1952.

Survey of Activities, Particularly Those of Section "O".

General.

The Sydney meeting opened on Wednesday, August 20, at the University of Sydney. A general council meeting dealt with formal business. Increased subscription rates were contemplated. An invitation was offered by Mr. N. H. Oliver, local Honorary Secretary for Victoria, to hold the next A.N.Z.A.A.S. meeting in Melbourne in February, 1955, which date would coincide with the centenary celebrations of the University of Melbourne.

At 11 o'clock on the same morning the official opening of the conference was conducted with traditional pageantry in the impressive Great Hall of the University. In the absence of the President, Prof. Sir Kerr Grant, who was overseas, the Immediate Past President, Dr. A. B. Walkom, inducted the President-elect, Professor Sir Douglas Copland. The audience were addressed by the Chairman of the New South Wales Committee, the Hon. K. W. Street, Chief Justice of the State.

Following the brief opening ceremony, sectional presidents and other office-bearers were entertained by the Lord Mayor of Sydney (Mr. O'Dea) at a civic reception at the Sydney Town Hall.

At 3 p.m. on the same day the customary garden party took place in the magnificent setting of the University quadrangle. The senior office-bearers and their wives performed the endurance test of shaking hands with all the visiting members and associates, thus proving that physical as well as mental ability is required of A.N.Z.A.A.S. Presidents. Although the storm clouds gathered, only a deluge of conversation and greetings fell.

The Wednesday evening saw a packed Great Hall to hear the presidential address by Sir Douglas Copland. The Governor of New South Wales, Sir John Northcott, was present, and spoke very appropriately. Many of the audience were surprised to hear that His Excellency had been a contributor to the Economics section of A.N.Z.A.A.S. in the 1920's. A short preliminary address of greeting from the British Association was delivered by Sir Edward Appleton with characteristic restraint.

In the presidential address Sir Douglas referred to the great complexity of modern government. Parliament liked to preserve its control on all the multitudinous administrative bodies. However, to govern wisely Parliament should increasingly devolve its powers to statutory bodies, which should enjoy a large degree af autonomy. He referred to the contributions that the social scientists could be expected to make to science.

Section "O."

On the following day (Thursday) the sectional presidents went into action. The first part of the morning was left free so that members could attend the presidential address of Section B (Chemistry). This was delivered by Professor A. K. MacBeth on the subject "Some Aspects of the Chemistry of Monocyclic Terpenes." Prof. MacBeth administers the Department of

SECTION "O" OFFICE-BEARERS.

Mr. N. C. Manning, President, Mr. H. W. Read, Secretary, and Professor R. H. Thorp, Immediate Past President.

Pharmacy in the University of Adelaide. Many Section O delegates attended his address.

Later on Thursday morning the presidential address of Section O was delivered by Mr. N. C. Manning. This address, "Scholastic Pharmacy and Pharmacy in Practice," is published in this issue of the Journal. In the afternoon the contributed papers proper got under way. A useful determination of Sodium Phenobarbitone in non-aqueous solvents was presented by Messrs. Brooks and Wright. Miss Frith's paper on "Preservatives in Eye Drops" was topical, much enjoyed and well presented. Dr. Eddy spoke with easy authority on some uses in medicine and pharmacy of radioisotopes.

Thursday evening was spent in the pharmacy laboratories, where a demonstration of work by staff and students was of particular interest and value to Section O members. The demonstration was preceded by a pleasant cocktail party in the Materia Medica Museum, which has taken on a definite "new look." The demonstration included such items as compatibility of acridines with non-ionic emulgents; a neat method of filtering eye drops through sintered glass directly into the container; sterilisation processes; some research equipment for the extraction of plant products; methods used in preparing ophthalmic solutions; emulgents; conductivity and staining of emulsions; enteric coating of expensive equipment was seen in action. Chick hearts were being isolated by the dozen, the B.P. rat diaphragm preparation was set up and working, the salivary flow of the dog was recorded, the activity of mice was measured, while an interesting exhibit was a constant rate perfusion pump designed by Professor Thorp.

On Monday afternoon many members of Section O attended the Liversidge Lecture (Section B), which was delivered by Dr. J. R. Price. The title was "Recent Developments in the Chemistry of Australian Plant Products." The lecture contained much of interest to all concerned with drug chemistry.

In the evening there was a sectional excursion to the Museum of Applied Arts and Sciences. The director (Mr. Penfold) and his staff were most hospitable, and an insight into the work of the museum was obtained by the visitors. The planetarium was one of the "star turns."

Tuesday morning produced two papers from Dr. Shaw's laboratory in the Melbourne Physiology School. These papers showed some excellent leads in fundamental pharmacology. Messrs. Penfold and Morrison also submitted a paper on Australian essential oils.

After lunch on Tuesday there were communications from Prof. Rubbo ("Chemical and Heat Sterilisation"), Prof. Thorp and Mr. Lipsham. These were followed

Group of Section "O" delegates taken on the roof of the laboratories of Parke, Davis & Co. Ltd., Rosebery.

capsules; ampoule preparation and presentation (including printing on the ampoule with ink). Some pharmacological demonstrations included the assessment of analgesic activity by the "burnt rat's tail" method, and also mice on the "treadmill" of the curare assay. Supper concluded a thoroughly good demonstration.

Friday was a full day for the presentation of papers. The interest of the Sydney department in cardiac glycosides was apparent from the papers in the morning session. There is evidence of much planned teamwork.

The afternoon's papers revealed some interesting and important progress on the chemical side by Mr. Wright and Mr. McHugh.

Friday evening was taken up with talks and papers in the Applied Pharmaceutics Forum, which is a session intended for practitioners. The highlight of the evening was "Some Difficulties Associated with the Dispensing of Surface Active Agents" by Messrs. Eckert and Griffiths. This paper will be looked for in print with great interest.

Saturday was a free day of recuperation.

Sunday, another day of recuperation, was spent "down the south coast" in splendid weather. The visibility from Sublime Point was excellent.

Monday morning was allotted to a demonstration in the pharmacology laboratories, where some modern and

by a reception at Government House, where His Excellency received some hundreds of guests. Sydney's Government House must be surely on one of the best sites in the world. The stately reception rooms were full to overflowing.

Back to the Great Hall at 8 p.m. to hear Dr. Ian Clunies Ross deliver the centenary oration, "The Responsibility of Science and the University in the Modern World." In his oration Dr. Clunies Ross shared much common ground with Mr. Lipsham's paper of the earlier afternoon. He advocated the concurrent study of the humanities with science as a need to combat rigidity and narrowness of outlook.

From the oration the path lay to the Chemists' Ball at Sydney's Trocadero. The Council of the Society had issued invitations generously to visiting members of Section O.

Wednesday saw the section well on the job again with a symposium on "Accreditation of Proprietary Medicines." This was very well attended. The major contribution was from Mr. J. G. Landers, who suggested a method of approach, based on the Swiss manner of handling the problem. Dr. Shaw outlined the operation of Victorian Patent Medicines Act.

After lunch the Section visited Parke Davis & Co.'s factory at Rosebery, where an escorted tour plus afternoon tea had been kindly arranged by General Manager and pharmacist Mr. Theo White.

Australian and New Zealand Association for the Advancement of Science

TWENTY-NINTH MEETING HELD IN SYDNEY DURING THE WEEK OF AUGUST 20-27, 1952.

Patrons:

His Excellency the Rt. Hon. Sir William McKell, G.C.M.G., Governor-General of the Commonwealth of Australia.

His Excellency Lieutenant-General Rt. Hon. Baron Freyberg, V.C., G.C.M.G., K.C.B., K.B.E., D.S.O., Governor-General of the Dominion of New Zealand.

His Excellency Lieutenant-General Sir John Northcott, K.C.M.G., C.B., M.V.O., Governor of New South Wales.

President:

Sir Douglas B. Copland, K.B.E., C.M.G., D.Sc., Litt.D., LL.D.

Visiting Overseas Scientists:

Professor M. L. Oliphant, F.R.S., Australian National University, Canberra.
Sir John Cockcroft, F.R.S., Head of the Atomic Energy Institution, Great Britain.
Professor H. B. Creighton, Fulbright Scholar, U.S.A.
Sir Edward Appleton, G.B.E., K.C.B., F.R.S.

Some of the Section "O" delegates at the entrance to the new Medical School Building, where the meetings were held.

SECTION "O"—PHARMACEUTICAL SCIENCE.

President—N. C. Manning, B.Sc., F.P.S.(Vic.), Melbourne.

Presidential Address—"Scholastic Pharmacy and Pharmacy in Practice."

Vice Presidents—R. A. Anderson, B.Sc., A.U.A., Adelaide; R. E. Bowey, A.U.A., D.B.A., Adelaide; A. W. Callister, F.P.S.(Vic.), Victoria; J. H. Gould, M.P.S., Hobart; Miss D. K. Large, B.Sc., Dip.Pharm., Sydney; W. A. Lenehan, M.P.S., South Brisbane; E. F. Lipsham, F.P.S.(Vic.), Adelaide; E. E. Nye, B.Sc., F.P.S.(Vic.), Melbourne; A. T. S. Sissons, B.Sc., Dip.Ed., F.R.A.C.I., Melbourne; Professor R. H. Thorp, B.Sc., Ph.D., Sydney; R. C. Tottenham, Bondi; N.S.W.; E. M. Watson, Ph.D., F.R.A.C.I., Perth; C. H. Williams, M.Sc., Dip.Pharm., Queensland; S. E. Wright, M.Sc., Dip.Pharm., A.R.I.C., Sydney.

Honorary Secretary—H. W. Read, M.P.S., 67a O'Brien Street, Bondi, N.S.W.

(For list of other papers read see page 862.)

PRESIDENTIAL ADDRESS

SCHOLASTIC PHARMACY AND PHARMACY IN PRACTICE

Presidential Address by N. C. Manning, B.Sc., Ph.C., F.P.S.

No idea had I, 20 years ago, as a student of this University, that I should return to occupy the presidential office at an A.N.Z.A.A.S. meeting—meetings which are renowned for being rich in learning, tradition and goodwill, unique in atmosphere. It is, therefore, with peculiar feeling—feeling which is mixed with awe and honour—that I come to speak to you today in this most important of all pharmaceutical conferences in this country.

The fleeting time since studentship here has been occupied with practice, more studentship, more practice, and latterly teaching work. As a practitioner then, with an active interest on the teaching side, I have chosen to speak on the subject "Scholastic Pharmacy and Pharmacy in Practice." "Scholastic" because the term is rather wider in meaning than "Educational," and involves avenues rather outside the field of pure teaching, but important avenues, nevertheless, which teachers are frequently engaged upon. The pursuits of the scholar are wider than the stricter confines of the teacher. And then "Pharmacy in Practice" because this is my occupation—when the Pharmacy School permits it.

Mr. N. C. Manning.

One of the most outstanding aspects of Pharmaceutical Science is its remarkable size as a subject. This big subject is overdue for critical review.

PHARMACY IN PRACTICE.

I should like to take "Pharmacy in Practice" first, and to ask the question "How does the man in practice regard the Pharmacy School?"

The Practitioner's View of the Teaching Institution.

When one is in practice, one can obtain, in time, a sufficient and random sample of what the practitioner's views of the teaching body really are. They are often —and it is no use prevaricating—carping. However, let some practitioner from another State usurp the domestic prerogative to carp by critising the home-town Pharmacy School, and then the carper will turn like a jungle cat: "I'll have you know that our school is the best in the Commonwealth."

The Teacher's View of the Practitioner.

An equally important question pragmatically is how does the practitioner appear in the eyes of the teacher? It depends on the mood of the teacher. In the teacher's extreme of good humours, the practitioner appears as a loyal, crisp, hard-headed man of affairs, efficient, capable of doing the job in hand as no one else, but he can do it. In the other extreme of bad humours, the teacher feels something of what Wellington felt on the eve of Waterloo, in this vein: "I don't know whether the practitioner frightens or impresses the public or not, but by heavens he frightens me." In the teacher's blackest moments, which are rare, the teaching body tolerates its practitioners in the manner that a sheep dog tolerates fleas. A true appraisal of the practitioner, obviously, lies somewhere between these extremes.

The Public's View of the Practitioner.

How does the public assess the pharmacist in practice? As a storekeeper with pottery, milk shakes, artificial jewellery and lottery tickets for sale, and with the added licence to charge a high price for coloured water? Or does the public regard the pharmacist as a kindly, helpful, knowledgeable professional man, whose judgment can be relied upon on all occasions? A man

who knows his limitations and is ready to admit them, but who has an encyclopaedic general knowledge about drugs, not only with regard to human ills, public health matters and the general unwisdom of self-medication, but also with regard to their use for ants in the pantry and stains on the table cloth? Again a true assessment lies somewhere in between.

Pharmacy's Function.

What is practical pharmacy's function? Pharmacy in practice, like any other profession, is designed primarily for the public welfare. One of its main purposes must necessarily be the protection of the public. This protection has many facets, but in general pharmacy regulates at the point of supply drugs, poisons, restricted substances and medicines of all types. Many so-called toiletries are borderline medicines. The knowledge of the pharmacist must often automatically regulate supply. This is a general statement, but I feel a sound one. It is a difficult point for some Governments and some Government consultants to grasp. If it is not so, why are **any** substances restricted to sale by pharmacists alone? If licensing to sell goods such as firearms, second-hand goods and alcohol is justified, licensing to sell drugs must be amply justified.

Let me make one further comment on restricted substances. Poison has become an inadequate word in modern times. Practising pharmacy would do well to change the names of its various Poisons Acts to "Poisons and Restricted Substances Acts," or some such equivalent, in order to recognise the problem of the contemporary mass of substances, which need restriction in their sales, but which at law are difficult to prove as actual "poisons." In this State of N.S.W. pharmacy would do well to change the content as well as the name of its Acts.

What else does this practical side of pharmacy do? In practice, pharmacy dispenses medicines—certainly a main function, but not by any means the only function. Other things it does, of course, are to give attention to storage, care, maintenance, use and handling of medicines. It is concerned also "with the buying and selling of goods within a special framework of knowledge, skill, experience and responsibility." Pharmacy will always be substantially concerned with buying and selling. Drugs and chemicals will always be sold, and those who buy and resell them to the public will always need to be trained people in the public interest. They, the buyers and sellers, will ever present a challenge as a group, by virtue of the knowledge they involuntarily must acquire in their trading activities. Let us not try to build a profession completely divorced from trade. All the social health centres in Christendom will not eliminate a purveyor of materials, which, by their very nature, require expertness in their handling and sale. Such an individual will continually present an enigma to drug science. Let us capitalise on his expertness, not repudiate it.

Pharmacy in practice is the custodian of drugs and poisons, and a good job it has done, too, in Australia, with habit-forming drugs. Wide legal power to abuse dangerous drug control has always been open to the pharmacist. As stated before, more and more drugs which are in need of control are difficult to classify as "poisons," especially against the opposition of manufacturers, with legal advisers willing to squeeze the last drop of advantage out of the old-fashioned law. This is inevitable with statute law, unless modernised.

Pharmacy in practice is concerned with the forensic requirements of drug custodianship, with the interpretation of the context in which a drug is being used, with strength, unitage, chemical names, and identity at the point of supply. It is concerned with the supplying of ancillary advice of a medical and chemico-medical nature, within a special medical sphere, to the public. This sphere is very closely linked with medical science, and pharmacy readily acknowledges the rights and privileges of the medical profession here. It is concerned also with the supplying of advice of a special chemico-pharmaceutical nature to the public. This latter sphere is peculiar to pharmacy alone. One thinks of requests to eliminate fleas in the flock mattress and rats in the rafters.

Human Relations.

All such activity requires, in addition to knowledge, much experience in fine shades of human relations and behaviour. If the conduct of a *prepared* half-hour interview is a big accomplishment of the student in social science, how much more difficult is it to conduct an unrehearsed three-minute interview with a customer or the patient of a medico. For a "sale" (in the ordinary sense) is a truncated and difficult interview. There is a very fine point at which a pharmaceutical vendor, who is to a large extent the customer's servant, may undergo a subtle transition and become the consultant, who is, or should be, the customer's master. Consider, therefore, the pharmaceutical vendor—he toils much, rarely does he sin!

The transition from vendor to consultant, in the hands of an experienced practitioner, is barely perceptible, and therein lies solid public service and public protection. The pharmaceutical vendor is exposed to extraordinary public risk, and requires a strictly professional attitude. One could almost say "Caveat Pharmaceutical *Vendor.*" If this transition is imperceptible to the customer, it will be apparent that the whole service is of an inconspicuous type. A woman who has had a broken finger set by her doctor is in no doubt as to the type of service she has received. This type of service is immediately apparent to all. A woman coming into a pharmacy for some strong nitric acid to remove a wart on the end of her baby's nose, and going out with some Salicylic Collodion, may be quite unconscious that her child has been quietly protected from being singularly unattractive to the opposite sex in later life. This type of service is not apparent at all. Perhaps pharmacy, like another great organisation, could be termed "the silent service."

One striking difference to be noted here is the minor nature of the pharmacist's unit of service. Although, if that baby just referred to were a girl, she would have much preferred in later life a crooked finger to a concave depression in the tip of her nose. But this difference in degree is offset by the fact that, whereas the medico counts his patients in tens, the pharmacist counts his customers in hundreds. Dramatic "wonder drug" miracles, like criminal trials, capture the imagination and the headlines. But the chronic itch still goes on "itching." And just as most legal problems are never taken to court, most maladies are never brought to the operating table.

Service Transcends Sale.

There is another strange thing about the pharmaceutical service. When a motor car is sold, the sale is, usually, the prime concern of the salesman. At all costs make the sale—the service comes after the sale (theoretically at any rate it should). In pharmacy more than anywhere else, where goods are sold, service should come before the sale. Frequently service must come to the complete exclusion of sale. When this happens, the public's standards of value and judgment are raised, the "silent service" is operating at its best, and immense goodwill is built up for the profession. Don't let "sales-happy" trade groups shake us on this point. As an adjunct to this type of service it is important that the identity of the pharmacy should not be lost. A pharmacy should be immediately identifiable as a pharmacy.

"A Million Little Requests."

In an endeavour not to over-generalise about the pharmacy's activities, it is important to examine some of the pharmaceutical things, often "little" things, which are asked for by "little" people. "What is the best thing for killing fleas?" says a member of the public. Any trader could sell flea-killers just as skil-

fully as the pharmacist (says some Government consultant), so long as the container is properly labelled with adequate warnings. But is this so with regard to Carbromal and γ-Benzene Hexachloride? Is it *really* so in the public's interest? While not doubting the erudition of the Government's adviser, we would like to take him behind the pharmaceutical scene to a world of "little" requests, a world of little requests—but of a million little requests.

Lauryl Thiocyanate is effective against nits in the hair. Is not the substance sufficiently irritating and toxic for a trained person to be entrusted with the sale? Phthalate insect repellants are severe on the mouth and eyes. Is the public not really better served by the pharmacist handling such a product?

Distribution of Drugs Through Professional Channels.

An incipient occupational dermatitis is being bathed in a saponaceus germicide. Sometimes it is simply a cake of medicated soap which may aggravate such a condition. True, any trader can sell a cake of soap. True, also, that many a pharmacist will sell a cake of medicated soap which is destined to do damage in such a case. The pharmacist may not even be consulted about its use. But, all things considered, is not the pharmacist the logical one to handle *all* medicinal products? Yes, I mean *all* drugs, even aspirin too. It's a big enough boon to be available to the public without hardship, but it's a big enough killer to have some restriction on its supply. Hardship and danger are basic criteria in drug distribution. We need delicate and easily-operated needle valves at the spillway of drug marketing. Open sale opens the floodgates of "drug-happiness." To quote Othello, "What drugs, what charms, . . . and what mighty magic" can surge through those mighty gates. Let us learn the lesson of the last 50 years. If we must have a working rule, let it be "Keep drug supply wholesome." This is only possible by distribution through professional channels.

The Pharmacist in Public Health Schemes.

The pharmacist is an unpaid public servant. A person wants some anti-histamines, or it may be some phenobarbitone or sulphadiazine, or penicillin or Amphetamine. "Why can't I get them?" It takes time and patience to explain why their sale is restricted and their unbridled use undesirable. The interview is a dead loss; it very often incurs the customer's disfavour, but it is part of a service, a very inconspicuous service. In any public health scheme the Government needs explanations to the public on restricted drug supply. Pharmacy gives these explanations—no charge.

A pharmacist helps by directing an odd rodent ulcer and an odd toxic thyroid to the right quarters, and not at all infrequently a gastric or duodenal ulcer; often a chronic appendix, pleurisy and a pneumonia. He virtually never sees an Addison's disease or a Rocky Mountain Spotted Fever. He sees countless numbers of herpes, cuts, abrasions, impetigo, and all common ills. Most ills are common ills. He handles innumerable silverfish in the lingerie, moats in the eye, and mice in the cupboards, while the real Mordecai in his gate is "something that is certain to get rid of this pimple by tonight, as I'm going to a ball."

Esoteric Doctrine.

All these things the pharmacist does. These things which he does need saying. They need saying, too, from a sufficiently imposing pulpit. So far as I know they have never been said at an A.N.Z.A.A.S. meeting. The doctrine of pharmaceutical practice has remained esoteric too long. Because of the pharmacist's wide contact with the public, he is revealed as the obvious member of the health team to disseminate general information on public health matters. Great Britain has already given a lead in this method of National Health Education.

The plain fact is that if the pharmacist did not do these things, the standard of medical service, as it now exists, would break down under the hundredfold flood of extra patients who would besiege the doctors. A similar breakdown would also occur if we eliminated patent medicines and all forms of self-medication. No matter how much we deplore the large-scale consumption of patent medicines and the widespread habit of self-medication, the physicians could never handle the avalanche if we forced people to eliminate all self-medication and home treatment, that is to say from throat jubes upwards. The pharmacist's role, then, comes more sharply into focus as a guide on where these practices may prove undesirable or dangerous. He is already accrediting medicines in the light of his own knowledge and experience.

Errors.

Having considered the pharmaceutical service, let us see where it is in error. One bad error that pharmacy in practice (the man in the shop) makes is the lopsided deployment of his energies within the ranks of the profession. A well-organised commercial body is an essential to pharmacy. Real strength lies in having this body well in step with the professional body. In Australia we have a fairly good measure of this. It is remarkable, nevertheless, how many men will give their time, energy, experience and pragmatic support to organising this commercial side. It is also remarkable how few contribute to the professional, educational or scholastic side. This needs immediate attention.

Some of our men argue something like this: Teachers in our institutions spend 75 per cent. of the time educating our students to do a job which will occupy them 25 per cent. of the time. One hears similar criticism in the other professions. It is generally specious reasoning and a great lunacy, which melts into thin air when the critic gets close to the problem. Education for limited contingencies stultifies learning. Why neuro-anatomy for the medical student, as he is only to diagnose chicken pox? Why physical chemistry for the professional chemistry student when he is only going to analyse milk? Why bankruptcy for the law student when he is only going to draw up wills? Why pills for the pharmacy student when he is only going to ring up tills?

Another criticism is that too few of our practitioners branch out into other professional fields in a thorough manner. Let our members go out into diverse branches of study—into law, commerce, economics, arts and science; pharmacy will benefit tremendously by such excursions.

New drugs are arriving on the pharmaceutical scene at such a rate that the practitioner has got to look carefully as his tools of trade. His tools of trade are his equipment and his books of reference. The equipment and books of a generation ago will not suffice today. High prices make discrimination necessary. Books are costly, and current editions are needed to handle modern drugs adequately. The handling of uncompounded drugs, in my experience, often requires more references than the compounded. In other words, confusion is more confounded in checking on the uncompounded!

Methods of Training.

Apprenticeship has been a much-ventilated subject of late. If the matter is reduced to a basis of quality and hours of practical training required in a pharmacy, much common ground can be found for future discussion. Pharmacy in practice often asks the question of itself: private institution or University for our trainees? This question arises largely from lack of definition of the scope of pharmaceutical practice. Much can be said on both sides. The University is an acknowledged seat of learning in most communities. Students of promise are not lost to science upon graduation. They enjoy better academic training and better academic opportunity.

The private institution has also much to be said in

its favour. There can only be one valid reason for maintaining a private institution, that it will or may produce better practitioners. For a long, long time many separate institutions have satisfactorily followed their own lights. One thinks of Military and Naval Academies, Theological Institutions, Teachers' Colleges, Colleges of Physicians and Surgeons, Monasteries and many institutes of technology and research, all functioning in an endeavour to give better training and better results. Clearly, in Australia, the various States will have to act in accordance with their several needs and their past attainments. And with regard to attainments, let us keep the British picture well in view. At no stage should hard-won autonomy be surrendered lightly.

Needs.

Many practitioners have expressed sincerely the view that they feel a need for a wider educational background to converse adequately on modern drugs with both medical practitioners and the public. This needs some comment. Modern drugs are among the most complicated developments of modern technology. One needs chemical background to know what they are, physiological and pharmacological background to know how they function. These principles are a challenge and a need to modern pharmacy.

Ideals.

There are many things that one would like the practice of pharmacy to contribute to the community. There are many things ideally that it could contribute. Some of these it already does. In Australia, with the special problem of distance and remoteness, it does so with a singularly national twist, just as happens in the case of the medical service. The practice of pharmacy has long needed a defence of its misunderstood functions. It is not possible here to deal with all sides of such a big question. But if I, as your President, were asked to offer an entreaty to pharmacists in practice for an ideal functioning of our profession, I would say this:—

"May the pharmacy always provide a place where men and women will be greeted on equal terms and with a friendly smile. May deference continue to be given freely and not solicited. May children be encouraged here by pleasant memories and an appealing atmosphere of a warm corner in the life of the community. (The effect of pharmacy on young minds is considerable. I can quote two notable examples. One is the head of an Australian Pharmacy Department, the other is the late Professor John Hunter of this University. Both were influenced by the 'atmosphere' of pharmacy in early impressionable years.) May young men and women be fortified against the sterner game of life by the realisation that here is an establishment, whose legitimate function they understand, whose judgment they respect, and whose service they appreciate in its rightful place. May the poor in heart and mind and body get comfort here, where time off is taken to speak to the 'little people' in a decent way about 'little things.' May the aged be met with patience, steadiness and simplicity of approach which is so hard for them to receive in a hurly-burly world. May simple fear and frequent doubt and smouldering superstition be here cast out, and hopes strengthened by commonsense enlightenment. May judgments be confirmed without fee, fear or favour. And may the fearful go forward with steadier tread to an improving world."

SCHOLASTIC PHARMACY.

As I have indicated, pharmacy in practice is big. We now come to the scholastic aspect of pharmacy, which is even bigger.

By the standards of scholastic pharmacy we stand or fall as a profession. What is scholastic pharmacy's purpose? For whom is it designed? The answer is clear cut, the comment is brief. Its purpose is to seek the truth, its design is for the public welfare. Those who teach, or legislate on drugs, or advise Ministers of the Crown, realise that there is, at times, a significant difference between things which benefit pharmacy and things which benefit the people. Free and copious antibiotics may be "good for pharmacy," but how "good" are they for the people? The record of scholastic pharmacy is the exact antithesis of sectional interest.

What does scholastic pharmacy do?

Teaching.

It teaches students in its schools, practitioners in its refresher courses, and it teaches members of the other professions by virtue of its intra-professional activities.

In this land of big distances one very important feature of pharmaceutical teaching has been the refresher lecture tours to the provinces by teams of lecturers. In Victoria in the last five years visits have been made to six country cities, with an average of five lecturers participating in each visit.

Pharmaceutical teaching has aimed at giving a broad, general course of instruction for practitioners, where a "general" rather than a "special" degree is attempted. Where, say, twelve subjects are taken instead of the customary eight, with perhaps Pharmaceutics and Pharmaceutical Chemistry alone at a senior standard. Limitation of teaching time and finance have impeded this aim. It has aimed, without knowing it, at a rough equivalent of first year pass standard in Bacteriology, Biochemistry, Physiology and latterly Pharmacology in addition to the basic science subjects. Where possible it has given these subjects a pharmaceutical bias. This is sound educationally.

Publishing.

Scholastic pharmacy publishes journals, handbooks and forensic aids; and in Australia it is laying the foundation stones of experience in publishing works of references. Our larger and maturer kindred body in the United Kingdom has become a world leader in directing pharmaceutical publications. It is now entrusted with directing the publication of the B.P., the B.P.C., Martindale and many other primary standards of medical reference. Scholastic pharmacy in Australia is playing a parallel role. Great difficulties will attend any Government which tries to sponsor publication of basic medical references through any other quarters.

Investigation.

Scholastic pharmacy does pure research in homeopathic quantities, applied research in slightly more allopathic quantities, and formulation, with its attendant investigations, in wholesale quantities.

Community Work.

Scholastic pharmacy does much community work. Often it enters into this work in association with pharmaceutical practitioners, but if one peruses the lists of committees and advisory bodies, one is impressed by the work done by members of the teaching staffs of the various pharmacy schools.

Much work is done on Poisons and Stock Foods Control, Agricultural Pesticides, Dangerous Drug Control, Food and Drug Standards, Weights and Measures Standards, Liaison Committees, Public Health Projects, Social Medicine Schemes, Pharmacopoeia Committees and Defence Committees.

Examinations.

Scholastic pharmacy also has, as one of its particular fields, the conduct of examinations: entrance, post graduate, and qualifying examination. The qualifying examination will always be a particularly important phase of pharmaceutical work, as the very nature of pharmacy demands a statutory qualification to practise.

All these things scholastic pharmacy does. Next we must ask ourselves of the excellence of this contribution. Where is it in error? Where does it fall short

of the desirable contribution? Where is it in conflict with other contributions of this type?

Discussion.

Let us see where our teaching work is in error. The teaching, although insufficient, has been sound. It must always chiefly be teaching practitioners to practise; training students for the protection of the public. There has been, undoubtedly, too much gross variation in training within the schools. However, even a strong protagonist of individual variation within the schools (and I am one of these) would baulk at a comparison of the teaching programme envisaged in this University and the conditions which have prevailed for many years in Tasmania. The methods have often been so different as to be a bad presentation of pharmacy to the outside world.

But uniformity may also be bad. There is still too much uniformity in the overloading of teachers. There is still too much uniformity in the small amounts of money made available for buildings and teaching work. The same applies to research undertakings and travel facilities. All Governments and the Government of this State to an even greater degree, because of the size of the State, have got to start thinking in extra tens of thousands of pounds annually to strengthen the teaching side of drug-science, on which depend sound drug services in their manifold forms. In a modern community these can only be strengthened soundly through that sheet-anchor of the medical science of tomorrow — the Pharmacy School.

The incredible thing is that so much has been achieved. The overall picture of pharmaceutical teaching in this country during the last 50 years has been one of teaching without spare time and with myriads of spare-time jobs. To a Government body this may sound like a familiar complaint on an educational topic. But if steps are not taken to meet the complaint, not only must the health services suffer in many immediate and pressing directions, but the maturation of our health service generally must be retarded. The weakness of medical science today is that it is being forced to give its undergraduates a smattering in a great many subjects. The strength of pharmacy, on the other hand, is that it will tend more and more to produce specialists in one field—the science of drugs.

And now what is the position of our publishing work? The publishing work has been very creditable. Having regard to present Australian conditions, the Journal has been of the most suitable type. Little in drug development escapes mention and a reference to more detailed work in other quarters. The editorial work has been good and consistent. The Journal warrants, perhaps, more encouragement from the ranks of scholastic pharmacy. It is the "scientific public relations officer" of pharmacy's national endeavour.

Mr. H. W. Read. Secretary Sydney Meeting of Section "O".

The A.P.F. has been the major work of reference published by P.A.A.N.Z., with an editorial committee of three in Melbourne and revision committees in each State. The A.P.F. has been produced almost entirely by the pharmacists (with one outstanding exception, who is both pharmacist and physician). (I would mention also the monumental work of Finnemore in A.P.F. production.)' The A.P.F. is in need of more medical and other specialist assistance on its revision committees. But to those who have made contact with this type of work, it is most striking how it is pre-eminently a pharmaceutical matter. Also to anyone who has sat on these committees, it will be apparent that the Pharmacy Departments will always dominate them. A pharmacopoeia must compromise with tradition and yet give leadership; it is no assignment for rigid minds.

In addition to the A.P.F., leaflets, handbooks, regulations and forensic aids, national emergency and war pharmacopoeias, there is a large degree of achievement, mostly by voluntary effort. One particular in which our publishing work is in error is in the indefatigable work of a few individuals. The burden of work is not sufficiently shared. If the young lack judgment, let us rely on those with judgment on the scholastic side to judge the young men and women and pick them for a better allocation of the work. The profession must see to it that the money is available to absorb these young people.

An aspect of pharmacy's work of directing publications in which the Federal Government could, and should, offer real leadership, is in the subsidising of Australia's own Pharmacopoeia, the A.P.F. It is nothing short of preposterous that this volume, now undergoing its eight revision, should be undertaken by voluntary labour alone. The compilation of it is a colossal task. It is acknowledged that the A.P.F. will never need to be the costly product of, say, the U.S.P. The B.P. and its companion volumes standing behind us make this unnecessary. But we will always need supplementary monographs, formulae, codifying material and local modifications. I often feel that if the Federal Government made an annual grant (without strings) of at least £10,000 to P.A.A.N.Z., which is a properly constituted body, there would be a modicum of justice in this national endeavour and a rightful acknowledgment of community work well done. Minimum requirements are a full-time editor, an assistant, a full-time secretary, a laboratory and a travelling expense account.

This position is particularly ironic when it is remembered that the consolidated work of this Pharmacopoeia has been available to and was used by the original P.B.A. Scheme and to a lesser extent by the subsequent P.M.S. Scheme. A member of the editorial committee sits on the present P.B.A. "drug list" committee. This is to say nothing of the immediate call on A.P.F.

machinery by the Emergency Formulary of Australia and the Australian War Pharmacopoeia during the recent war period. Recently, in Victoria, the A.P.F. has been approved by the various metropolitan and provincial hospitals as a common hospital pharmacopoeia throughout the State. This is a unique achievement.

The Federal and State Governments have two alternatives:

1. To work in a dilatory way with their Health Departments, who have not the potential for directing Pharmacopoeia production, except with scholastic pharmacy doing all the work.
2. Leave the A.P.F. with P.A.A.N.Z.; add their support and have a real job done. In other words, discriminate between the wisdom of consolidation and the folly of dissipation.

To Ministers of the Crown and the Prime Minister I should respectfully like to put this question: Are the Pharmacopoeias of Britain and the U.S. prepared by voluntary labour?

Consider now the errors of our investigational ways. Investigational work in pharmacy falls into three categories:

(i) Pure Research work, which is almost lacking in this country today. The solution is to be found in more Government aid and in the elimination of overloading of our teachers. A background of pure research is vital to drug science and to nationhood.

(ii) Applied Research. The amount of applied research undertaken is quite creditable, but a similar small group of indefatigables is largely responsible for the output. It is my view that this University is going to set a pace and a standard of research which will reflect great credit to the country.

(iii) Formulation, which consists of dialectically considering objective and subjective data for the compilation of formulae, official monographs and the like. Here again the indefatigables are in evidence. We should make no mistake about the importance and the medical context of this work.

Let us be careful with our investigational work that intellectual snobbery does not creep into the organisation. The words "pure" and "fundamental" have become vogue words. The well-known pose of intellectual superiority of the "pure" research worker has made itself felt already in academic life. In Australia, neither the national character nor the national achievement warrant glib gradations of quality in scientific work.

There remains the community work. The community work of scholastic pharmacy is of a type which is not readily appreciated by the Government, the public, and the other professions, and sometimes by the ranks of our own profession. If a medico sutures a cut foot, the community service rendered is evident—particularly to the person with the cut foot. If a committee reduces the number of accidental poisonings in a year by 30 per cent. by virtue of intelligent legislation, not only is such work hidden from the public's knowledge, but also from the members of the other and our own profession. Although reported on, it is seldom noticed by members of the Government and the press.

The voluntary nature of committee work needs some comment. A generation ago such work was undertaken by many public-spirited individuals without thought of payment and without actual receipt of payment. The volume of this work has increased, and is likely to increase as public protection and public needs come into clearer focus to Governments. The new generation of experts insists on payment for sitting on these expert committees, and the new generation is probably right. But to the elder drug statesman it often seems that the spirit of service has been lost. No nation, no state, no church, no organisation, no profession is anything without the moving spirit of service. This spirit of service, I feel, has not been lost, although it seemingly takes on a new guise. The attitudes are quite reconcilable; the old must understand the new—the new, the old. This, however, is a demand of modern life, not only of modern pharmacy.

And finally I ask, what of examinations? Examinations have always been most satisfactory when the teaching authority has been closely linked with the examining authority. In converse, they have suffered bad times. Independent examiners may be the best available, they may be the best in the world, but the institutional examiner simply has more information available to him than the independent one. Two things are required in the teacher-examiner, competence and integrity. If he has not these he should not have been appointed. The schools, therefore, do not want fatuous criticism of the teacher-examiner from outside.

Scholastic pharmacy, from the national point of view, stands fairly in education, impoverished in investigational work, excellently in community work, and valiantly and alone in Pharmacopoeia production. Is there a national Government so uninterested as to let such things continue? It stands with little public appreciation of its role. If a professor of pharmaceutics were appointed in this country tomorrow, most likely the public would say, and the editors of our great dailies, just what a medical practitioner said to me, in Melbourne, the other day, "What is pharmaceutics?" A Chair of Pharmaceutical Chemistry is long overdue. Scholastic pharmacy ranks higher in national life than the public knows, higher indeed that some members of the profession realise. This is an apparent absurdity, but the truth.

Where does scholastic pharmacy stand in the whole world of science? The greatest single criticism that can be levelled at it is that for 50 years it has been unable to implement the compulsory teaching of tertiary level physics as a basic science subject. Another supplementary need is for practical biology in its various forms for the teaching of pharmaceutics, histology, physiology and pharmacology. It must be stated that pressure from practitioners has often retarded this development. No pharmacy course, in Australia at present, can stand reduction of biology in its curriculum. On the contrary, this subject needs expansion on the physiological side to include more and more practical work. To the general physiologist, the distinction between plant and animal cells is often not a significant one. But the subject biology must be kept with a bias to the functional side.

In recent times, scholastic pharmacy has failed to tackle the major problem of drug strength, and to a lesser degree drug dosage, in an adequate way for the man in practice. The Codex has done a lot, and this is readily acknowledged. This problem offers good scope to pharmacology.

And then, on the world scene, dangerous drug control in Australia has been a monument to pharmacy. No public trust has ever been kept more faithfully than the pharmacist's handling of dangerous drugs. This work has been influenced by, and guided by, scholastic pharmacy.

The most important question of appraisal of all is where does scholastic pharmacy stand in history? Dispensing is a lesser thing than pharmaceutics, which is a lesser thing than pharmacy, which is a lesser thing than pharmaceutical science. Scholastic pharmacy stands four square as the mother of all, the mother of drug science.

In an age where we are being persuaded to try panaceas to health "without drugs," such as pseudo-psychology, dietaries, eating natural herbs, exposure to radiations of various kinds, and relaxing, drug science could be said to be passing through a very real testing time. It will be the better for its crisis, but no one doubts for one minute that it will emerge unperturbed, stronger, more streamlined, quite undaunted, sounder than ever before.

Dangerous drugs, like morphine, have saved inestimable pain, and at the same time have produced incal-

culable suffering. Safe drugs like aspirin have done much good, but have also added their quota to human misery, albeit in a minor key. They have produced countless neurotics. We should not, as a race, always be leaning on a bottle of analgesics. Innocuous drugs such as glycerophosphates as placebos, have attempted to substitute something that has been lacking in personality. And this, in the main, they have done poorly. In spite of this, placebos are necessary to medical practice.

Throughout history drugs have brought a mixture of social good and social evil. Control and wholesomeness in drug usage has increased the good, diminished the evil. New drugs of great promise are making this increase an avalanche; not so much to cure disease, but to aid nature cure disease. Curing disease still remains largely an undeveloped province of applied genetics. That is, if we let agricultural science be our guide. Hearts still fail because of their genetic incapacity.

Drug science is losing the magical Temple flavour of the Egyptians, which was improved by the Greeks, carefully preserved by the Monasteries, boldly refined and sadly ignited by the Arabs, and is being atavistically transmuted by some manufacturers of modern proprietary medicines. It has every chance, after all these centuries, of becoming detached from undesirable misuse and unscientific humbug. Drug accreditation has become a pharmaceutical sine qua non. In every phase of this development scholastic pharmacy has played a noble but unpublicised part. The score is being orchestrated for a pharmaceutical climax. Drug science is coming into its own.

If this account of scholastic pharmacy bears any resemblance to a book review, this is not altogether coincidental. Pharmacy is a book, not wide open, not closed, but being read, and what magic this word "book" conjures up in the world of learning. Oliver Goldsmith has said, "A book may be amusing with numerous errors, or it may be dull without a single absurdity." The pharmaceutical saga has many absurdities, and therefore, to say the least, is never dull. It would be unnecessarily brutal to apply Byron's description to our pharmaceutical book:

"'Tis pleasant, sure, to see one's name in print,
A book's a book, although there's nothing in't."

Perhaps you may think it overgenerous to apply to the book of pharmacy Shakespeare's appraisal:—

"A good book is the precious life blood of a master spirit,
Embalmed and treasured up on purpose to life beyond life."

Perhaps it is overgenerous, but I submit to you, "This is what I think."

SOME USES OF RADIO-ISOTOPES IN MEDICINE

By C. E. Eddy

(Director, Commonwealth X-Ray and Radium Laboratory.)

To understand something of the nature of isotopes, it is desirable first to review briefly our knowledge of atomic structure. Until 1896, the atom of any element had been regarded as an indivisible unit. Following the discovery of X-rays and radio-activity, however, definite evidence began to accumulate that all atoms could be further divided. By 1934 it had been accepted on a wealth of experimental evidence that there were three elementary atomic building blocks, namely, electrons, protons and neutrons. The electron was a negatively charged particle of very small mass. The proton, with a mass approximately 1800 times that of the electron, had a positive charge. The neutron, with a mass equal to that of the proton, was uncharged. The atom of any element consisted of a number of electrons moving in widely separated orbits about a central point, the number of the electrons being equal to the atomic number of the element. The protons and neutrons were arranged together in a closely concentrated nucleus at the central point. The number of protons had to be equal to the number of electrons, since the atom was electrically neutral. Sufficient neutrons were then added to make up the atomic mass of the element.

On this basis, atoms of different elements differed only in the number of electrons, protons and neutrons. The chemical properties of the element could be satisfactorily explained in terms of the number of electrons. There was, however, one difficulty to be surmounted, in that the atomic mass of every element should be a whole number, whereas it was known as a result of accurate measurements that this was often not the case; for example, the atomic mass of chlorine was 35.5. It was suggested by Soddy that an element might exist in more than one atomic form, and that, although the chemical properties were identical, the masses were not; for example, chlorine might be a mixture of equal numbers of atoms of mass 35 and 36. He suggested the term isotopes for such atomic forms. Aston, with the mass spectrograph, proved that many elements did exist in isotopic form, each of which had an atomic mass of an exact number; these isotopic forms always occurred in the same relative proportions, so that the observed atomic mass was constant. Actually it was found that chlorine existed in two isotopic forms, of mass 35 and 37, and always in such proportions that the mean mass was 35.5. Since the number of electrons in the different isotopic forms of the one element was constant, it was possible to represent each isotope by a nuclear symbol; for example, the two isotopes of chlorine could be written $_{17}Cl^{35}$ and $_{17}Cl^{37}$. Here the superscript denotes the atomic mass, and the subscript the atomic number. Since the atomic number is constant for any one element, the subscript is sometimes omitted.

Table I.

Atomic Numbers, Atomic Weights, and Stable Isotopes of Some Representative Elements.

Element	Atomic Number	Atomic Weight	Mass Number of Isotopes
Hydrogen	1	1.0081	1, 2, 3
Helium	2	4.0040	4
Lithium	3	6.94	6, 7
Fluorine	9	19.00	19
Neon	10	20.18	20, 21, 22
Sodium	11	23.00	23
Magnesium	12	24.32	24, 25, 26
Zinc	30	65.38	64, 66, 67, 68, 70
Tin	50	118.70	112, 114, 115, 116, 117, 118, 119, 120, 122, 124

In the disintegration of natural radioactive substances, two types of corpuscular radiation can be emitted, leaving the residual atom as an isotope of another element. The alpha rays were found to consist of two protons plus two neutrons, and the beta rays to be electrons. It was possible to depict these transmutations by means of nuclear formulae; for example, the decay of radium to radon with the emission of an alpha particle can be written as—

$$_{88}Ra^{226} \longrightarrow {}_{86}Rn^{222} + {}_{2}He^{4}$$

and the decay of Radium B (an isotope of lead) to Radium C (an isotope of bismuth) with the emission of a beta ray can be written as—

$$_{82}Pb^{214} \longrightarrow {}_{83}Bi^{214} + {}_{-1}e^{0}$$

It will be seen that in these equations the sums of the superscripts (and of the subscripts) on each side are equal.

In a series of brilliant experiments reported in 1919,

Rutherford showed that it was possible to artificially produce transmutations between elements. In investigating the passage of alpha particles through pure nitrogen, Rutherford showed that minute quantities of hydrogen and oxygen were produced. This could be explained by the equation—

$$_7N^{14} + {}_2He^4 \longrightarrow {}_8O^{17} + {}_1H^1$$

Here an alpha particle possessing large kinetic energy struck and entered the nucleus of a nitrogen atom, and so disturbed it that a proton (hydrogen nucleus) was ejected, leaving an oxygen nucleus.

This discovery that atoms could be transmuted began an intensive search for similar reactions. The beta particle, although ejected with high velocities, has a very small mass, so that it has a low kinetic energy and is therefore not a suitable projectile to bombard atomic nuclei. Alpha particles, although of large mass, were limited in velocity, and were not particularly efficient as "atom smashers." Attempts were therefore made to obtain other high-speed particles by accelerating hydrogen nuclei (protons) by intense electrical fields. In 1932, Cockcroft and Walton, with a 200,000-volt acceleration of protons against targets of lithium, discovered that alpha particles of exceedingly high energy were emitted. The nuclear reaction could be rewritten—

$$_3Li^7 + {}_1H^1 \longrightarrow {}_2He^4 + {}_2He^4$$

To account for the high energy of the alpha particles, Cockcroft and Walton examined the masses of the atoms on each side of the equation, and found that a small, but definite, amount of mass had disappeared, which, on the Einstein relationship, corresponded to the energy of the alpha particles produced. This meant that, whereas the Law of Conservation of Energy was true, the Law of Conservation of Mass was not true. This release of energy at the expense of mass has been an important principle in the development of atomic energy.

In 1934, two important discoveries were made. Firstly, Chadwick discovered the neutron, which was liberated when alpha particles struck beryllium, according to the equation—

$$_4Be^9 + {}_2He^4 \longrightarrow {}_6C^{12} + {}_0n^1$$

The neutron, because of its uncharged condition, was an ideal projectile to hurl against charged atomic nuclei. Secondly, Joliot and Curie, in directing a beam of alpha particles on to aluminium, found that the aluminium emitted radiation, which continued after the alpha particles had been removed, and that the intensity of the radiation then diminished exponentially; that is, in the same way as that from radioactive substances. They showed that this could be explained if the alpha particle combined with an aluminium nucleus to form a nucleus of phosphorus, which was unstable and decayed, emitting an electron. It was therefore possible to produce radioactive substances artificially.

It is always of interest to note that Marie Curie and her husband discovered natural radioactivity, and that their daughter, Irene, and her husband discovered artificial radioactivity.

With the neutron available as an atomic projectile, and the interesting avenues opening up in artificial radioactivity, scientists everywhere feverishly entered this new field. Electrical machines capable of operation up to millions of volts were designed, and radio-isotopes of many elements were soon produced.

By 1938, it had been shown theoretically that an isotope of uranium (uranium 235), if obtained in higher concentrations than exist in nature, could be expected to disintegrate into two nearly equal fragments with the release of a large quantity of energy and the emission of neutrons. These neutrons would accelerate the disintegration of further uranium 235 atoms, and the increasing supply of neutrons would thus give rise to a "chain reaction." It was upon this principle of the chain reaction that the atomic pile was constructed. Within these piles there are abundant supplies of neutrons, and materials of all types can be irradiated. These piles are the source of large quantities of radio-isotopes, partly in the form of mixed fission products, and partly as specially irradiated materials. The products arising from the fission of uranium 235 cover a range of elements in the rare earth group, and are produced literally in hundredweights as a waste product of atomic energy projects. By placing materials for irradiation within the pile, radio-isotopes in a relatively pure form can be obtained. The number of artificially radioactive isotopes which have been identified now exceeds 600.

Like natural radio-isotopes, artificial radio-isotopes may emit alpha, beta, or gamma rays. They also decay exponentially, with a known half-life which may range from fractions of a second to thousands of years. It is therefore possible, by determining the type and energy of the radiations emitted and the half-life, to identify any particular radio-isotope even in a mixture of isotopes.

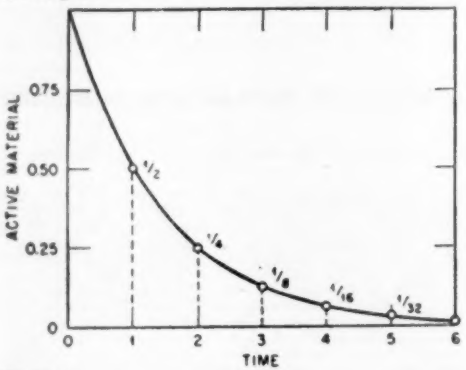


Figure 1.
Exponential curve of radioactive decay, showing principle of half-life.

The discovery of artificial radio-istopes has already led to large number of developments, and the number of these can be expected to increase. It must be remembered that there are certain basic differences between natural and artificial radio-isotopes. The natural radio-isotopes comprise three families, each consisting of about a dozen progressive daughter products. Even if any particular element in a family is prepared in a pure state, atoms of the whole range of daughter products will be produced within a very short time, so that not only are there a number of elements present, but the radiations emitted cover a wide range in both type and energy. Further, the naturally occurring radio-isotopes are generally elements of high atomic number. Artificial radioactivity can be produced in elements throughout the whole range of atomic numbers. Moreover, very few artificial radio-isotopes have a radioactive daughter product, and, even when this occurs, there is rarely more than one. Probably the most important consideration, however, is that, whereas natural radio-isotopes are both rare and expensive, artificial radio-isotopes are already plentiful and comparatively cheap. It has been estimated that the total amount of radium which has been refined over the 55 years since its discovery is about five kilograms, and the present cost is nearly £10,000 per gram (or curie). One artificial radio-isotope (cobalt 60, very similar in its radiations to the gamma rays

from radium) is now being produced at the rate of more than 150 curies per year, and the cost is less than £100 per curie. Although the half-life of cobalt 60 is only five years as against 1600 years for radium, it is obvious that many more institutions can afford to purcase cobalt 60, and in quite large quantities.

Before discussing the uses of radio-isotopes in medicine, it is of interest to briefly review some of the more general applications of the radiations emitted. Radio-isotopes are being used in industrial radiography as an alternative to radium, radon, and X-rays for the examination of castings, welds, and various assembled products to detect imperfections and irregularities. The enormously intense sources available from the fission products are being used to produce mutations in plants with a view to the production of new, and maybe useful, strains. The sterilising action of radiation on bacteria is being investigated with a view to the cold sterilisation of canned foodstuffs and of drugs. By choosing isotopes with radiation of a suitable range, it is possible to measure continuously during production the thickness of sheets of metal and other materials, so that the rollers can be altered to maintain a uniform thickness. Troublesome electrostatic charges in textile and paper mills can be dispersed.

Radio-isotopes are already being used as substitutes for radium in the treatment of certain diseases. In some cases, it is even possible to devise new methods of treatment where the radio-isotope of an element is administered orally or intravenously, and then by natural processes concentrated in a particular organ. Radiophosphorus is being used extensively in this way in certain diseases of the blood-forming organs, and radioiodine in certain diseases of the thyroid gland.

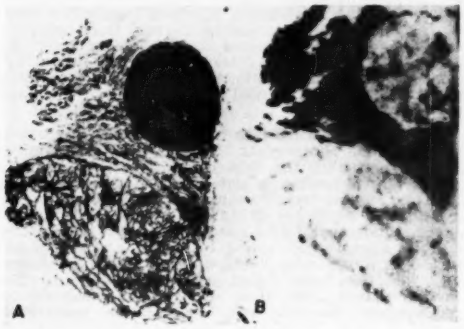


Figure 2.

Principle of autoradiography: A, ordinary stained section of thyroid tissue: B, blackening on photographic film placed in contact with section. Note that radioiodine administered orally has been concentrated in particular areas of tissue.

But it is because radio-isotopes become readily detectable because of the radiations they emit that they are being applied most widely and possibly most interestingly. These radiations can cause fluorescence in certain crystals, can make a gas electrically conducting, and can affect a photographic plate. In all three cases, it is possible to detect the passage of a single alpha, beta or gamma ray. The means of detection of a radio-isotope therefore becomes extraordinarily sensitive. The sensitivity of detection increases as the half-life and atomic number of the isotope decreases; for carbon 14, with a half-life of 6000 years, 2×10^{-11} gm. can be detected, while with the shorter-lived phosphorus 32 (14.3 days) as little as 4×10^{-16} gm. is detectable. It is obvious therefore that an element in radio-isotopic form can be detected in levels much below the range of even micro-analytical chemistry. It is evident that it is only necessary to add a small amount of the active isotope to a large amount of the normal element to be able to trace the element through any mechanical, chemical, or biological system. The amount of radio-isotope can be so small that the radiation emitted is too weak to produce of itself any change in the system. The term "tracer" atom, or "tagged" atom, has accordingly been applied to radio-isotopes. It will be obvious that the tracer atom, having the same chemical and physiological properties as the normal atom, will behave in exactly the same manner, so that its movements can be taken as those of the normal atoms.

Tagged atoms have an important application in ordinary analytical chemistry. In some cases, the quantitative determination of an element in a mixture involves a large number of continued precipitations, which are very time-consuming. A small sample (with known activity) of a radio-isotope of the element being sought is first added to the mixture, and the mass of the first precipitate obtained. If this mass then contains, say, one-fifth of the activity of the added radio-isotope, then without further chemical procedure the total mass of the element can be calculated using this ratio, taking into consideration, if necessary, the mass of the added radio-isotope.

There is a definite limit to the sensitivity with which various elements in samples of materials may be determined by chemical means. If, however, the sample is introduced into an atomic pile, the element may be converted into a radioactive element, which can then be detected with certainty and with greatly increased sensitivity. The range of detection for even an element such as arsenic, for which sensitive chemical tests exist, can be appreciably extended in this way. As little as 0.01 micrograms of arsenic can be detected quantitatively by the most sensitive chemical methods. In the radioactivation method of analysis the irradiation of the stable isotope (arsenic 75) gives use to the radio-isotope (arsenic 76) which emits beta and gamma rays and has a half-life of 26.8 hours. By the recognition of both half-life and energy of the emergent radiation it is possible to identify with certainty as little as 0.0001 micrograms in a total sample of material of 1 milligram. The radio-analysis method is not subject to the errors which occur in ordinary chemical analysis due to the introduction of contaminants from glassware or reagents. This method of detecting arsenic has already been employed in medico-legal investigations.

The tagged atom has become a very important tool in the hands of the biochemist. It was always possible to obtain some information regarding, say, the metabolism of calcium in the human body by carefully measuring the amounts taken in and excreted. This information, however, was not always conclusive. If, for example, the intake over any period exactly equalled the output, then it could only be inferred that the body has neither absorbed nor lost any calcium. No information is available to show whether all (or some fraction of) the calcium administered had been absorbed, and an equal amount liberated. If the experiment is carried out with tagged calcium, however, it can be clearly shown if any of the excreted calcium has been liberated from the body, and, if so, what proportion.

Further, it is possible to determine in what organs the administered calcium has been absorbed. Where the isotope being studied emits penetrating radiations which can escape from the body, the amounts being taken up can be determined by instruments located outside the body. This is the case of iodine 131 absorbed by the thyroid gland. In other cases, it may be necessary to take sections from the organ, either from the living or the dead body.

The first experiments using radio-isotopes in meta-

bolism were carried out in 1913, using radium disintegration products, which were isotopes of lead and bismuth. Since heavy elements play an insignificant part in animal and plant growth, these results were mainly of importance in indicating the possibilities of the method. With the preparation of artificial radio-isotopes of elements which are vital constituents of plant and animal tissues, however, it has been possible already to investigate many problems of metabolism. As a result, it has now been recognised that biochemical processes are dynamic rather than static, and that the constituent elements of even permanent structures, such as bones and teeth, are continually undergoing replacement.

Some examples of the use of tagged atoms will indicate the general possibilities of the method. Sodium 24 has been used to investigate defects in the circulatory system, resulting either from trauma or disease. If, for example, a defect is suspected in the left leg, then its presence can be determined by injecting the sodium intravenously somewhere in an upper extremity, and determining the relative counts which are received in the left and right feet respectively after varying times. The test can be repeated by making further injections at intervals to determine whether the circulation is improving as a result of treatment. In plastic surgery, the use of radio-sodium is of value in quickly determining whether the blood supply to a pedicle graft is satisfactory, and much time can be saved in each step of a series of operations.

Other investigations using sodium 24 have demonstrated the amazing speed with which fluids move in the body. Sodium 24 injected intramuscularly in a finger can be detected in a toe within 15 seconds, and in perspiration within 75 seconds. By determining the quantity of injected sodium which passes across the walls of blood vessels in a short time, it has been calculated that in an average man a total of 50 pounds of sodium chloride pass out of the blood each day, the whole process being a cyclic one, which could not be so measured by other means.

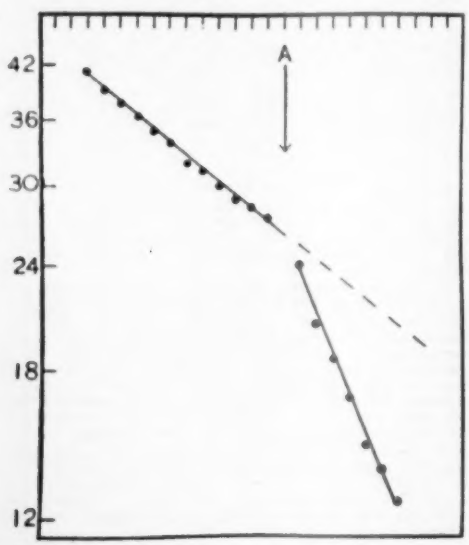


Figure 3.
Effect of local injection of histamine on the rate of clearance of sodium 24 from muscle. Sodium 24 was injected intramuscularly. The ordinates show the geiger counter rates taken over the site of injection. The abscissae show minute intervals. Note how the rate of clearance was increased immediately due to the vasodilator effect of a local injection at time A of 0.2 milliliters of 1 : 1000 solution of histamine.

The effect of posture on the velocity of blood flow in the veins of the legs of healthy subjects has been investigated. From a value of 2.6 centimeters per second in the erect position the velocity increases to 3.0 when sitting upright, to 4.5 when lying prone, and rises to above 9 when the feet are maintained slightly above the head.

Some interesting experiments have been carried out with haemoglobin in blood tagged with radioactive iron. By including tagged iron in the diet, tagged haemoglobin can be produced. Much of the advances which have been made in the methods of preservation of blood in "blood banks" has resulted from the study of blood tagged with iron. The life of the tagged blood from a donor can be followed readily in the body of the recipient. By using two radio-isotopes of iron (iron 55 and iron 59), which can readily be distinguished from each other by their half-lives and the radiations they emit, many problems arising in transfusion processes have been elucidated.

Radio-iodine has been used in the study of thyroid function. With cases of hyperthyroidism, the majority of the iodine is absorbed in the thyroid gland, and only a small fraction is excreted, while the reverse occurs with hypothyroidism. By determining the fraction of a dose of radio-iodine which is absorbed (or excreted), it is possible to form some opinion as to the functioning of the thyroid of a patient which may supplement the information obtained from other clinical tests. By drawing "isodose curves" from measurements made with a geiger counter moved over the gland, it is possible to determine whether the entire gland is functioning uniformly, or whether (as often happens in diseased glands) only a portion of the gland is functioning.

Some investigations with radio-iodine are of particular interest to pharmacists. The power of an ointment base to penetrate the skin is an important property which cannot readily be determined quantitatively. In this case, iodine-tagged sodium iodide was thoroughly mixed with a number of different types of bases, and applied under controlled conditions to the shaved skin of rats. The iodine carried through the skin was absorbed in the cellular fluids, entered the blood stream, and was selectively taken up by the thyroid. The thyroid glands were then removed, and assayed for radio-iodine. In this way the relative penetrating power of some 40 common bases have been measured, and it has been shown that some are as much as a thousand times as efficient as others.

By tagging soaps, it has been possible to determine the residue of a soap remaining on the skin after repeated washings. The rate of depletion of phosphorus in teeth by various solutions (mouth washes, etc.) has been determined by injecting rats with radio-phosphorus. After several days, the teeth are extracted, and show radioactively the presence of phosphorus. The diminution in phosphorus can then be determined after the teeth have been immersed in various solutions.

In animal nutrition, minute amounts of elements such as copper, cobalt, nickel, chromium and manganese have been shown to be very important. These amounts are too small to be detected in various organs by chemical means. Tagged samples of these elements are being used to elucidate the problem of where these essential elements are utilised in the body.

The action of drugs such as the sulphur compounds and penicillin are being investigated by labelling them

with radio-sulphur. Vitamin B_{12} has been labelled with radio-cobalt, radio-phosphorus, and radio-carbon, and the biochemical systems by which the vitamin are utilised are being studied.

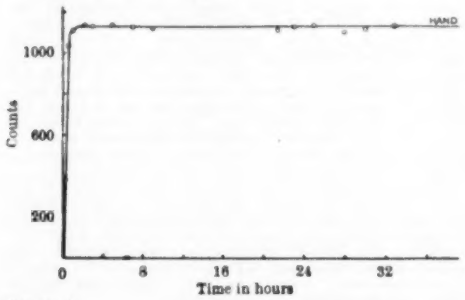
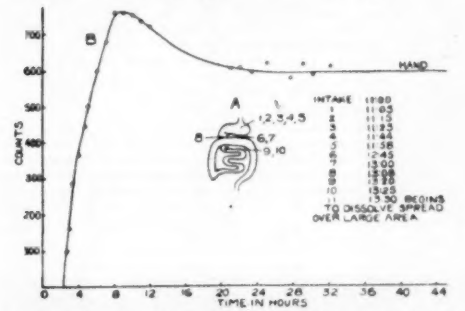


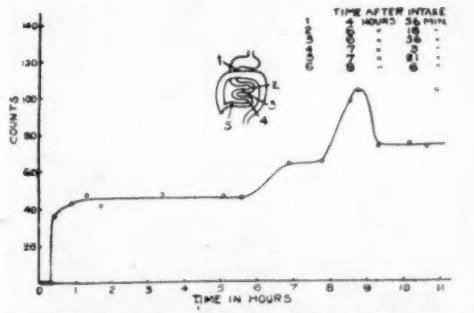
Figure 4.

Uptake of sodium 24 from ordinary pills and from pills with an enteric coating. The uptake was measured by a geiger counter over a hand.

(a) Uncoated pill, from which sodium was absorbed from stomach rapidly and without delay.



(b) Coated pill, which passed entirely through the stomach and was located by a geiger counter in positions as shown in the insert diagram. Note coating dissolved after 2 hours 20 minutes, and sodium was then absorbed from the small intestine.



(c) Pill, with a small scratch in coating, liberated some sodium fairly quickly when in the stomach. The main coating dissolved in from 6 to 8 hours.

The efficiency of enteric coatings has been studied by coating pills containing radio-sodium. Radio-sodium is rapidly absorbed with the blood stream and can be detected by a geiger counter placed in contact with an extremity. It is possible to trace the entire pill through the digestive tract, and to determine with certainty the time at which the enteric coating is dissolved.

By suitably planning the synthesis, it is possible to label at will different carbon atoms in an organic compound, and then trace the decomposition stages in the compound during a chemical or biological process. For example, acetic acid ($CH_3.COOH$) can have either one of the carbon atoms labelled, and it is possible to label one or more of the carbon atoms in the different sugar molecules.

By feeding appropriate radio-isotopes to plant and animal systems, it is possible to obtain labelled compounds by biological synthesis. Carbon, for example, can be introduced into a plant system by growing the plant in an atmosphere containing labelled carbon-dioxide. A recent advertisement from one American firm showed that the following compounds labelled with carbon 14 were available from stock:—

> Sacrose, d-glucose, d-fructose, algae (chlorella), digitalis, digitoxin, chlorophyll, carotene, amino acids, fatty acids, glucose phosphates, fructose phosphates, glycosides, acetyl glucose, barium carbide, acetylene, trichlorethylene and chloroform.

Although many firms are now manufacturing inorganic and organic compounds labelled with a variety of elements, radio-isotopes are not yet available for uncontrolled sale. In larger quantities, all radio-isotopes present a definite health hazard from the radiations they emit. If ingested into the body, even minute amounts may prove lethal, particularly when they may be selectively absorbed in a particular organ which is peculiarly sensitive to radiation (e.g., the bones and the liver). A few micrograms of radium entering the system by the digestive or respiratory tract, or through the blood stream, will be deposited in the bones, and the radiations emitted will then affect the blood-forming marrow to such an extent that death will ultimately result. The lethal dose of plutonium or polonium is only a few tenths of a microgram. Amounts of even a micro-microgram of some radio-isotopes may so contaminate a photographic dark room that "spotted" films result, and special precautions are even now being taken to ensure that the paper and boxes used for packing photographic materials (which may be affected for weeks or even months before development) are free from radioactive contamination. Because of these dangers, the authorities which produce radio-isotopes (primarily the Atomic Energy Establishments of Great Britain, Canada, and U.S.A.) have all decided that radio-isotopes are released only for specific projects in which they can be used "usefully and safely." In all cases, some specific authority has had to be set up in any country wishing to use isotopes from these sources, and the Commonwealth X-ray and Radium Laboratory acts in this capacity for Australia. The control is not in any way restrictive to legitimate needs, and advice on the dangers arising in the use of a particular isotope, and means of avoiding them, is freely available.

All radio-isotopes entering Australia pass through the Laboratory, and the individual doses required for use in tracer and treatment studies are standardised for the specified time and day of administration. It is probable that this function will long remain that of a physical laboratory rather than that of a pharmaceutical dispensary.

In transit, radio-isotopes must be shielded with sufficient lead to prevent the radiations affecting either undeveloped photographic film or human beings. Actually the former requirement requires a greater shielding. With many isotopes of short half-life (7 to 50

days) air transport is necessary, and the cost of freight is often appreciably greater than that of the isotope. In some cases, it is possible to place the isotope during transport in a special cavity in the tip of the wing of the aircraft. In this position, heavy lead shielding is not required, and the freight charges are reduced. Lead boxes are required to carry the isotope to the aircraft at the port of departure, and again at the port of arrival.

Australia is as yet dependent upon overseas sources for isotopes. Even with air transport, it is not reasonably possible to obtain isotopes with half-lives of less than a few days. Because of this, many of the isotopes of particular interest to physiologists are not readily available; these include such elements as bromine 82 (half-life 35 hours), copper 64 (12.8 hours), potassium 42 (12 hours), and sodium 24 (14.8 hours). Even in overseas countries the transport of short-lived radio-isotopes seriously limits their use, and to overcome this, research laboratories are being established adjacent to the production centres to which scientists may come with their problems and be supplied with short-lived isotopes immediately they are produced.

Investigations into atomic energy have involved the development of methods of separating isotopes of closely similar mass (for example, uranium 235 from uranium 238). These methods have been applied to the separation of the naturally occurring stable isotopes, which can then be used as tagged atoms where a mass spectograph is available for their detection. Many stable isotopes are important as tagged atoms in biological investigations; these include magnesium, sulphur, chlorine, potassium, calcium, iron, hydrogen, and oxygen. In general, the use of stable isotopes in tracer experiments involves the extract of a sample of material and conversion into a gaseous product, and the chemical processes must be carefully planned to exclude inaccuracies. On the other hand, experiments with stable isotopes are not handicapped, due to the need for haste, which occurs with radio-isotopes of short life.

The availability of isotopes, both stable and radioactive, has provided a powerful research tool which is already being applied in a wide variety of investigations, and this use may be expected to increase. In this connection at least, the development in atomic energy can be expected to become of great and lasting benefit to the world.

SOME USES OF RADIOISOTOPES IN MEDICINE.

By Dr. C. E. Eddy.

Discussion.

In the discussion on this paper, Mr. A. T. S. Sissons said they were indebted to Dr. Eddy for a very clear, concise and authoritative statement of the subject. In Melbourne they appreciated his interest in pharmaceutical education, and his co-operation on several occasions with the Pharmacy Board. Some remarks made on the previous day by the Vice-Chancellor and Dr. Walkom regarding the early history of the Association prompted him (Mr. Sissons) to comment on progress in knowledge of isotopes referred to at meetings of this Association.

A.N.Z.A.A.S. held its first meeting in 1886, the year in which Crookes first suggested the possibility of isotopes, when he discussed the meaning to be attached to atomic weights. What exactly was implied by saying the atomic weight of Calcium was 40.0? In 1903 Rutherford and Soddy launched the Disintegration Theory, and this in turn led Soddy, in 1910, to use the term "Isotope." In 1914, Australia had the memorable visit of the British Association. The proceedings of Sections A and B were dominated by considerations of Atomic Structure, and Australian workers were greatly stimulated by the presence of such leaders as Rutherford and Moseley.

In 1919, Rutherford demonstrated artificially produced transmutation, the consequences of which were widely discussed at the 1920 meeting of A.N.Z.A.A.S.

In the history of Physical Sciences, 1934 would probably be regarded as a dividing line of the old and the new, for then Curie and Joliot accomplished the controlled formation of artificial radio-active species—some of the consequences of which were discussed in papers of the 1939 meeting of this Association.

Meantime racial intolerance and the denial of academic freedom in central Europe had driven a number of prominent workers in this field westward, to the subsequent great advantage of Britain and America.

During the 1940's radio-isotopes were produced by atomic-piles and some of the consequences of this greatly-increased production have been told by Dr. Eddy in his address this afternoon.

With the application of such substances to medicine, pharmacy was beginning to speculate on its responsibility in the matter of storage and distribution of such products, and such interest was intensified by the Radio-Active Substances Act 1948 (Great Britain); of this two clauses were as follows:—

"No person shall sell or otherwise supply any substance which contains more than the prescribed quantity of a radio-active element that is intended to be taken by, injected into, or applied to, a human, unless he is: (a) a duly qualified medical practitioner licensed under this act; (b) a registered pharmacist and the substance is supplied under a prescription signed and dated by a practitioner licensed as aforesaid.

This it was seen extended some provisions well known in pharmacy, namely limitation and control of supply and responsibility for accuracy of dispensing.

However, for some time any pharmaceutical problems would be simplified since production would be under Government control, and distribution would be from a few centres only and by trained personnel, including selected pharmaceutical chemists.

Left to right: Mr. S. E. Wright, Mr. N. C. Manning, Mrs. F. H. Shaw, Mrs. N. C. Manning and Mr. H. W. Read.

THE ESTIMATION OF SODIUM BARBITURATES IN NON-AQUEOUS SOLVENTS

G. L. Brooks and S. E. Wright,

Pharmacy Department, University of Sydney.

The use of nonaqueous solvents for titrating acids and bases which are too weak to be titrated in aqueous solution has gained popularity in recent years, and many reviews have been published. It is possible to titrate salts of strong bases and weak acids with a strong acid if a solvent can be found which enhances the basic properties of the salt. Similarly weak acids may be made more strongly acidic by the choice of correct solvent and be titrated with a nonaqueous solution of a base.

Fritz and Kean (Anal. Chem. **24**, 308; 1952) have developed simple methods for estimating sulphonamides as acids in benzene-methanol solution with sodium methylate as titrant. Vespe and Fritz (J.Amer. Pharm.Assoc. Sci. Ed. **41**, 197; 1952) have estimated barbiturates as acids in dimethylformamide with sodium methylate in benzene-methanol.

Sodium salts of organic acids such as benzoic, acetic, and citric may also be estimated volumetrically by dissolving them in glacial acetic acid and titrating with perchloric acid in glacial acetic acid. (Markunas and Riddick, Anal. Chem. **23**, 337; 1951). This method should apply to the estimation of sodium barbiturates and so avoid the somewhat lengthy gravimetric process in which the barbiturate is extracted with ether from an acidified solution of the salt, but so far it does not appear to have been tried.

Theory.

Using the now well-known Lowry-Bronsted Theory of Acids and Bases, an acid may be defined as a substance having a tendency to lose a proton, and a base as a substance with a tendency to gain a proton.

$$\underset{\text{Acid}}{A} \rightleftarrows \underset{\text{Proton}}{H^+} + \underset{\text{Base}}{B^-} \qquad (1)$$

It is, however, necessary for the Proton to be accepted by another base if dissociation is to occur. Solvents act as proton acceptors (bases) in this way—

$$\underset{\text{Acid}}{HA} \quad \underset{\substack{\text{Solvent}\\ \text{Base}}}{ROH} \rightleftarrows \underset{\text{Acid}}{ROH\,H^+} + \underset{\text{Base}}{A^-} \qquad (2)$$

The Acid ROH H^+ may then react further with a Base B—

$$ROH\,H^+ + B \rightleftarrows ROH + BH^+ \qquad (3)$$

This reaction (3) and hence complete neutralisation can only occur provided Base B is a stronger Proton accepter than Base A and solvent ROH. Water is a strong Proton Acceptor so that very weak bases cannot be titrated to complete neutrality with acids in aqueous solutions.

If, however, a solvent with less tendency to accept Protons is used this reaction (3) becomes possible. Acetic acid is such a solvent and will accept Protons only from very strong acids such as Perchloric Acid.

$$CH_3COOH + HClO_4 \rightleftarrows CH_3.COOH_2^+ + ClO_4^-$$

If a substance is now present which will accept a Proton more readily than Acetic Acid it will act as a base and neutralisation can occur.

$$CH_3.COOH_2^+ + B \rightleftarrows CH_3.COOH. + BH^+$$

The magnificent facade of the new Medical School of the University of Sydney.

Thus a barbiturate ion produced by ionization of a salt should function as a Proton acceptor (Base) in Glacial Acetic Acid and be titratable with Perchloric Acid. With Sodium Phenobarbitone the reactions would be—

$$HClO_4 + CH_3\,COOH \rightleftarrows CH_3.COOH_2^+ + ClO_4^-$$

$$CH_3.COOH_2^+ + C_{12}H_{11}O_3N_2 \rightleftarrows \underset{C_{12}H_{12}O_3N_2}{CH_3.COOH} +$$

In order to detect the end point, indicators which are relatively strongly acidic (PKValue 1-2.5), such as methyl violet, are used. Potentiometric methods are also used.

Method of Estimation.

A. Phenobarbitone Sodium and Barbitone Sodium: A weighed amount of the sodium barbiturate (from 0.2-

0.8 gramme) is dissolved in 30 ml. of anhydrous glacial acetic acid and titrated with O.1N perchloric acetic acid (Markunas & Riddick, Anal. Chem. **23**, 337, 1951) using two drops of 1 per cent. methyl violet solution in glacial acetic acid as indicator. The end point is taken when the blue violet colour changes to green. The perchloric acid solution should be standardised each day against potassium hydrogen phthalate under the same conditions as for the estimation, but this may not be necessary if allowance is made for the volume temperature change of glacial acetic acid as recommended by Beckett, Camp and Martin (J. Pharm. & Pharmacol. **4**, 399, 1952). The results are shown in Table 1.

Table 1.

Estimation of Pure Sodium Phenobarbitone and Sodium Barbitone.

Compound	Weight taken (grammes)	Weight estimated (grammes)	Percentage recovery
Sodium Phenobarbitone	0.785	0.77	98.2
	0.922	0.9	98.2
	0.824	0.808	98.2
	0.270	0.266	98.5
	0.393	0.388	98.3
Sodium Barbitone	0.367	0.37	101.0
	0.463	0.467	101.0
	0.573	0.548	102.0

B. Estimation of Sodium Barbiturates in Tablets and Capsules: The method was used to estimate samples of tablets of sodium phenobarbitone and the results obtained were compared with the B.P. method of assay. As most common tablet excipients are not basic they do not interfere with the method. Blank determinations were done on 0.5 gramme samples of lactose, talc, maize starch, kaolin and calcium phosphate with negligible results. Sodium alginate 0.5 gramme gave a blank of 0.5 ml. Twenty sodium phenobarbitone tablets were crushed and weighed. A weighed amount (about 0.4 gramme) was dissolved in glacial acetate and acid and titrated as above. Results obtained are shown in Table 2.

At the President's reception, Mr. H. A. Braithwaite (left) and Mr. E. E. Nye.

Table 2.

Estimation of Phenobarbitone Sodium Tablets.

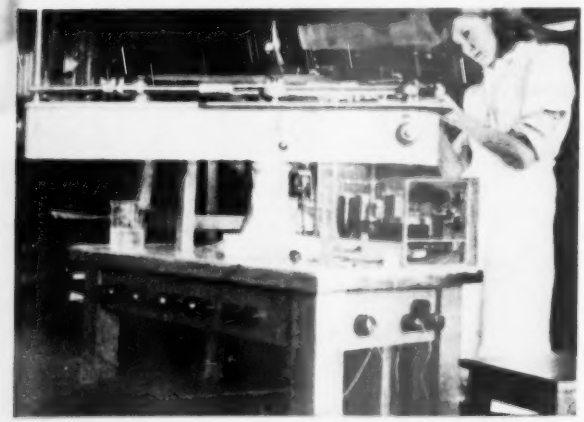
Sample	Average Weight per Tablet (milligrammes) Stated Weight	Weight found by titration	Weight found by B.P. method
A	65	62	60.5
	65	61	—
B	97	94	91
	97	94	—

The method was also used to estimate the sodium barbiturates in several samples of capsules. The contents of several capsules were weighed and a weighed quantity dissolved in glacial acetic acid and titrated as before. The results are given in Table 3.

Table 3.

Estimation of Sodium Barbiturate Capsules.

Compound.	Average Weight per Capsule (milligrammes) Stated Weight	Weight found by titration
Amytal Sodium	97	97
Pentobarbitone Sodium	97	96
Seconal Sodium	49	50



Demonstration in Pharmacology Laboratories. A view of a kymograph.

Summary.

(1) The use of perchloric acid in glacial acetic acid as a volumetric reagent has been applied to the estimation of pure sodium barbiturates and to pharmaceutical preparations of them.

(2) The method appears to give accurate results for pure compounds and can be adapted to the estimation of sodium barbiturates in the presence of common diluting agents used in the preparation of tablets and capsules.

SOME OBSERVATIONS OF THE DISTRIBUTION OF SUSPENDED DRUGS

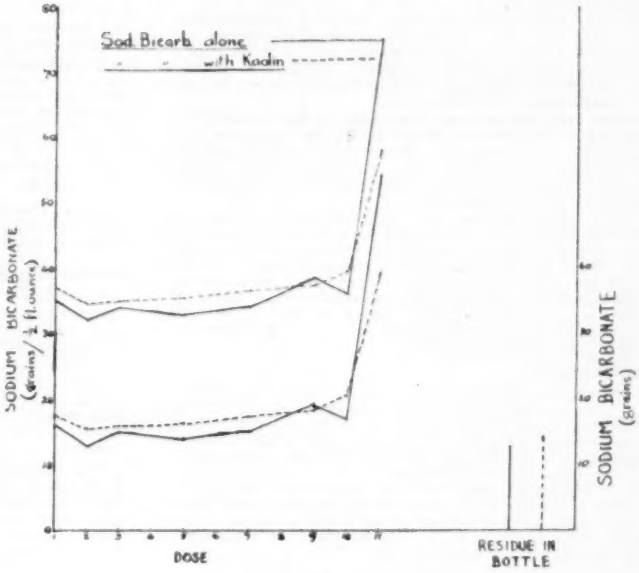
By R. C. Holder and A. E. Bowey, A.U.A., D.B.A.

We set out to determine the evenness of distribution of suspended drugs in liquid preparations, as these are taken by members of the public. Although the investigation has not been pursued very far, this report is being submitted since some of the results so far obtained are of interest.

We weighed water into ordinary 6 fluid ounce bottles, which were thereby calibrated at the 6 fluid ounce level. The quantities of drugs necessary to dispense the various mixtures were accurately weighed; in the appropriate cases they were triturated with mucilages, and in all cases they were carefully transferred to the containers and diluted to the 6 fluid ounce mark. The insoluble matter was allowed to sediment as in the normal usage of mixtures; doses were then poured off at intervals and assayed.

We asked two non-pharmacists to pour a dose of medicine from a bottle containing an insoluble powder. Their methods of doing this were practically identical, and in consequence we followed that same procedure in measuring doses for this investigation. It was as follows (see next page):—

DISTRIBUTION OF SODIUM BICARBONATE



GRAPH 1

Table 1.

Dose

	1	2	3	4	5	6	7	8	9	10	11	Remainder
G/½ fl. oz.:	1.02	1.01	1.04	N/A*	1.02	N/A	1.03	N/A	1.03	N/A	1.03	0.15G

*Not Assayed.

Table 2.

Dose	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
G/½ fl. oz.	—.02	—.03	0	N/A	—.02	N/A	—.01	N/A	—.01	N/A	—.01
Per cent.	—2	—3	0		—2		—1		—1		—1

Table 3.

Dose	1	2	3	4	5	6	7	8	9	10	11	12
Grains/½ fl: oz.	14.8	15.2	N/A	15.3	15.5	N/A	15.1	14.8	N/A	15.5	15.1	16.0

Table 4.

Dose	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
gr/½ fl. oz.	—0.6	—0.2	N/A	—0.1	+0.1	N/A	—0.3	—0.6	N/A	+0.1	—0.3	+0.6
Per cent.	—4	—1.3		—0.6	+0.6		—2	—4		+0.6	—2	+4

Table 5.

Sodium Bicarbonate alone.

Total	—12	—20	—14	N/A	—17	N/A	—14	N/A	—3.5	—8	+82
Undissolved	—24	—40	—28	N/A	—34	N/A	—28	N/A	—7	—16	+164

Sodium Bicarbonate plus Kaolin.

Total	—8	—14	—12	N/A	—11	N/A	—8	N/A	—5	—1	+45
Undissolved	—16	—28	—24	N/A	—22	N/A	—16	N/A	—10	—2	+90

Table 6.

Alone									
With kaolin									
—5	—9	—9	—7	—7	0	+9	+32		
—7	—2	—1	—½	—1	+1	+2	+1		

Table 7.

Dose	1	2	3	4	5	6	7	8	9	10	11
With Mag. Carb. Pond. ("true mean" 10.3 grains)	—7	—2	+1		0		—1		+1	+1	+1
With Sod. Bicarb ("true mean" 10.1 grains)	—2	—3	0		—1		—1		—1	0	+4

1. The bottle was shaken along its long axis until no layer of insoluble material remained at the bottom.
2. The bottle was set down, the cork removed and placed on the bench, the bottle again picked up and a dose of approximately half a fluid ounce was poured into a narrow cylindrical metric measure, which had been previously tested for the accuracy of its calibrations.

The volume measured was read to the nearest 0.1 millilitre (the internal diameter of the measure was 1¼ cms.), no subsequent adjustment being made to bring this volume to an exact half fluid ounce. When the last dose was taken the bottle was completely emptied into the measure.

The measured dose was assayed against reagents standardised to be equivalent to a known amount of the sample of drug used in the mixture, and the concentration per half fluid ounce was calculated. Therefore the figures given are a measure of the **concentration** of the liquid. This procedure was based on the view that a pharmacist cannot reasonably be held responsible for errors arising by a patient carelessly measuring incorrect volumes.

Sulphadiazine.

A mixture was prepared using in the 6 fluid ounces 12 grammes of a light, finely powdered sample of sulphadiazine with 1 fluid ounce of syrup and 1 fluid ounce of mucilage of tragacanth. The latter was prepared using tragacanth labelled B.P. and supplied by a reputable overseas supplier.

Eleven doses only were obtained from the bottle. They were assayed by the official process; blank titrations were carried out on samples containing mucilage and syrup only, and the amount finally remaining in the bottle was also determined.

The concentrations in grammes per half fluid ounce by our determinations were:—(see Table 1)

The mean of these figures is 1.025 grammes, which gives the total amount poured from the bottle as 12.30 grammes; if to this is added the residue which remained behind it appears that the total quantity in the bottle was 12.45 grammes, so that each ½ fluid ounce should have contained 1.04 grammes (i.e., 4 per cent. above the strength desired).

The deviations from this "true mean" in grammes per ½ fluid ounce and in percentages are:—(see Table 2)

We believe these results indicate that the procedure adopted to distribute the drug is satisfactory from the viewpoint under consideration.

Aspirin.

A mixture was prepared using in the 6 fluid ounces 180 grains of aspirin (in fine powder) and 60 grains of compound powder of tragacanth; the latter was prepared from the same tragacanth as in the first mixture, and acacia labelled B.P. from the same supplier. The doses were assayed by the official process (except that phenolphthalein was substituted for phenol red as indicator). Blank titrations were performed on samples containing only compound powder of tragacanth.

Twelve doses were poured and the concentrations obtained (in grains per ½ fluid ounce) for each were:—(see Table 3)

The amount remaining in the bottle after pouring the twelfth dose was accidentally lost.

The mean of these figures is 15.3 grains, but reference to the amount left in the bottle in the sulphadiazine mixture suggests that if we consider the total amount of drug in the bottle (including the residue) the "true mean" would appear to be 15.4 (i.e., 2½ per cent. above the strength desired).

The deviations from the "true mean" are then:—(see Table 4)

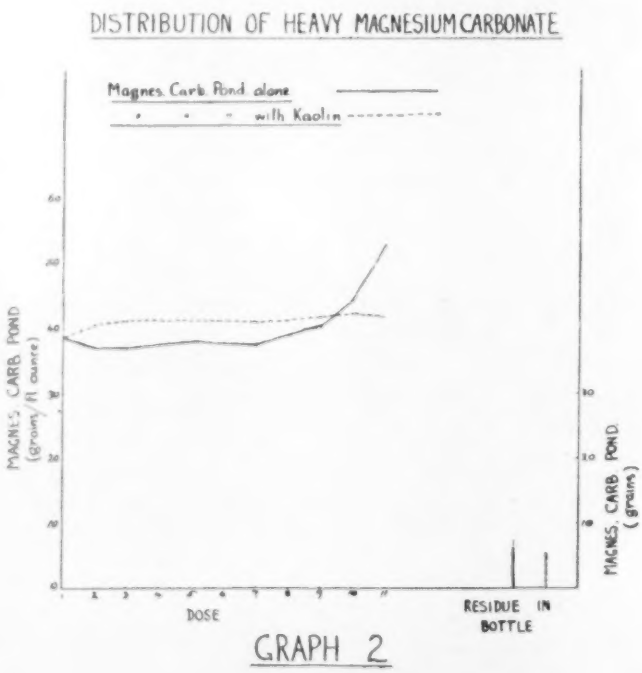
These results may also be considered to indicate that the normal pharmaceutical procedure with aspirin achieves satisfactory evenness of distribution.

Sodium Bicarbonate.

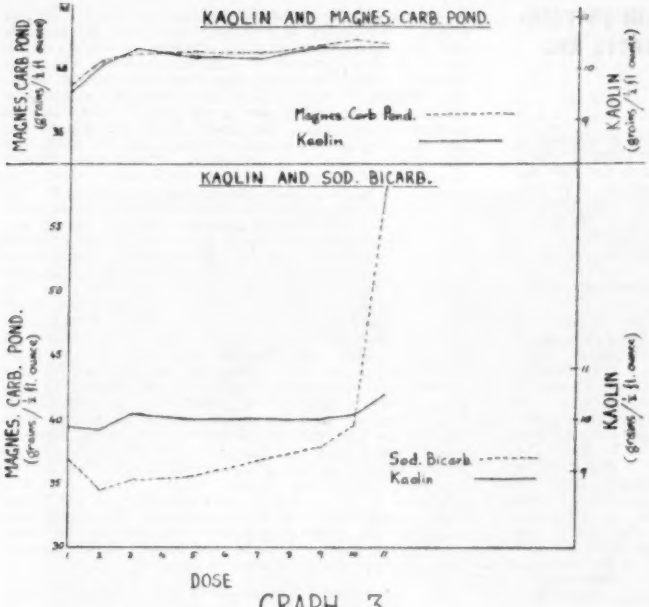
A mixture was prepared using 480 grains of sodium bicarbonate in the 6 fluid ounce bottle. Eleven doses were again obtained from the bottle and these were titrated against standardised acid using methyl orange as indicator.

A second mixture was prepared as above, but with the addition of 120 grains of kaolin taken from an overseas sample labelled "Colloidal Kaolin (Kaolin Lev. B.P." Eleven doses were obtained and similarly titrated.

The sodium bicarbonate concentrations are set out in Graph I. The fixed points only are of significance, but these have been joined together for easier reading. The upper portion of the graph is total sodium bicarbonate present; the lower portion represents that which is undissolved or suspended.



GRAPH 2



GRAPH 3

The distribution was much less satisfactory than in the previous cases.

The reasoning used above gives here a "true mean" very close to the desired 40 grains per ½ fluid ounce for the total sodium bicarbonate, while that for the undissolved portion is close to 20 grains per ½ fluid ounce.

The percentage errors then are:—(see Table 5)

If it is accepted that pharmaceutical procedure should aim to achieve evenness of dosage irrespective of the potency of the drug, these results must be regarded as unsatisfactory and the same position may apply with more potent drugs.

Heavy Magnesium Carbonate.

Mixtures of heavy magnesium carbonate, both alone and with kaolin, were prepared in the same way as the corresponding mixtures containing sodium bicarbonate. Eleven doses were obtained in each case and they were assayed by the addition of excess standard acid, and back titration with standard alkali using methyl orange as indicator.

Results are set out in Graph II.

From these results the "true means" appear to be 40.5 and 41.5 grains respectively. Percentage errors therefore are as under:—(see Table 6)

Distribution was much more even than in the case of the sodium bicarbonate. Kaolin very clearly improved the distribution, and in this case we feel it was satisfactory. In the case of the heavy magnesium carbonate alone we suggest that the errors were reasonable, except in the last dose; the error there is plainly too great to be acceptable.

Kaolin (with other drugs).

Those doses which contained kaolin were further examined to find their kaolin content by collection on filter paper, washing and ignition. The concentration obtained was converted to its equivalent of the sample of kaolin actually used. The factor employed was determined by igniting samples of that same kaolin.

The variations of kaolin per half fluid ounce were relatively small; the percentage variations are:—

See Table 7.

On Graph III we have plotted the distribution of the kaolin and also the distribution of the other drug present.

The lower section of the graph shows that in the kaolin-sodium bicarbonate mixture there appears to be no relationship between the two, whereas in the case of the kaolin and heavy magnesium carbonate (upper section) the connecting lines are very nearly parallel—that is, the two drugs appear to settle out as though they were in fact one compound, and, as noted previously, with sufficient slowness to give satisfactory distribution of each. This is probably a phenomenon due to adsorption, but it does suggest interesting possibilities in the selection of specific suspending agents for particular drugs.

At the President's reception (l. to r.) Mr. E. E. Nye, Mr. and Mrs. A. T. S. Sissons and Miss Boggio.

PROPRIETARY MEDICINE CONTROL IN SWITZERLAND AND AUSTRALIA—SOME FACTS AND PROPOSALS

By J. G. Landers.

The growth in the volume of proprietary medicines is creating similar problems for chemists in most civilised countries. On the economic plane, chemists are fighting what is, in many cases, a losing battle against demands by other trades—the grocers in Australia, the "Drogisten" in Germany, Austria and Switzerland—that the chemists' monopoly in certain types of medicinal preparations be no longer enforced by the State because, so the claim runs, a chemist's special knowledge and skill is not required to dispense the proprietary medicines in question.

Another problem arising from the large number of new proprietary medicines is that of curbing the manufacture of worthless or untruthfully advertised remedies. In distributing such merchandise the chemist not only becomes a party to a deception of his customers, but also strengthens the arguments of those who say that the principle of restricting the sale of medicines to pharmaceutical chemists does not really protect the public. It will be recalled that, in Victoria, the Health (Patent Medicines) Act 1942, requires registration of proprietary medicines and submission of formulae, advertising material, etc., to the Chief Health Officer, who may refuse to permit their distribution. No other Australian State has comparable legislation. It will also be recalled that the Pharmaceutical Association of Australia and New Zealand, at its 1951 conference, carried a motion, "That the Association explore a system of accreditation for new products before they are introduced to the trade."

This paper will attempt to explain how the Swiss tackle this problem. In Germany there have also been important developments in proprietary medicine control within recent years, but this paper will mention only certain features of these. What is more, I have been rash enough to draw certain parallels between conditions in Switzerland and those in Australia, and to suggest that we take a leaf from the Swiss book, or at least copy out a few paragraphs.

In Switzerland and Australia, federal constitutions divide political power between a central government and a number of regional governments—25 cantonal governments in Switzerland, six State governments in Australia—in such a way that only certain specific powers, e.g., defence, coinage, posts and telegraphs (but not power to control the distribution of medicines) are vested in the central government, while the regional governments may legislate on almost all other matters[1]. Nevertheless, there is now a large degree of uniformity among the Swiss cantons in respect of proprietary medicine control, and since the lack of such uniformity is one of the main problems which advocates of such legislation in Australia must face, there is some point in considering Swiss practice[2]. Between 1867 and 1900, there were several fruitless attempts to regulate the trade in proprietary medicines on an intercantonal basis. However, following a conference in 1900, seven Swiss cantons declared their adherence to an agreement binding them to require manufacturers of patent medicines to submit their products to the health authorities of their own canton. It was then at the discretion of these officials to submit such products to the Health Department in the canton of Zurich, where a committee of experts—physicians, an analyst, and later the pharmaceutical chemist attached to the Zurich Health Department—appraised them. The local cantonal authorities were then free to accept or reject the committee's advice. The first thing this committee did was to fall foul of the press (which feared loss of advertising revenue), the pharmacists and the manufacturers, by issuing a list of fraudulent remedies, the sale of which was to be prohibited. Peace was restored when a further inter-cantonal conference found that individual cantons were not bound to adhere to this suggestion. During the next three decades there were renewed but unsuccessful attempts to place the regulation of proprietary medicines on a federal basis. Such a move had been suggested at numerous conferences and would have been welcomed by the most important pharmaceutical manufacturers, as well as by the federal Swiss Government, but, as in Australia, there was no provision for it in the constitution. Other noteworthy developments were the failure of attempts by pharmaceutical and medical organisations to obtain representation on the committee, the drawing up of a model Act concerning the traffic in medicines and poisons, the enactment of which was "recommended" to the cantons, and the signing of an agreement with the Swiss Pharmaceutical Society in 1934, whereby the Society's analytical laboratory in Berne was placed at the disposal of the health authorities for the analysis of proprietary medicines. (The laboratory also furnishes advice to government departments, physicians and pharmacists.) At the same time the controlling authority for patent medicines left Zurich and came under the jurisdiction of the health authorities in Berne, where the laboratory is situated.

The three expert advisers were now to be a physician, a pharmacologist and a pharmaceutical chemist. (In 1951 these were Prof. P. Casparis, Professor of Pharmacy; Prof. W. Frey, Professor of Medicine; and Prof. W. Wilbrandt, Professor of Pharmacology, all of the University of Berne.) The controlling authority also received its present title: "Office Intercantonal de Controle des Médicaments," or, in German: "Interkantonale Kontrollstelle für Heilmittel," abbreviated "I.K.S." By the middle 1930's, 22 cantons adhered to the intercantonal agreement, and at a conference in May, 1942, all the twenty-five Swiss cantons signed a new agreement, whereby all proprietary medicines were to be submitted to the I.K.S. Certain labelling requirements were also agreed to. The Federal "Bundesrat" gave its formal approval in 1943, and the I.K.S. became independent of the Berne health authorities. The administrative structure of the I.K.S. is thus as follows: The annual conference of delegates from the 25 cantons is sovereign. It elects a president and a secretary, and is concerned with the budget and with broad principles relating to labelling and advertising of remedies. Then there is a managing committee (8 members in 1951, mainly cantonal health officers) which exercises general supervision, negotiates with interested organisations and firms, and acts as court of appeal. For instance, in 1951, it refused to lift "chemists-only" restrictions from a saline preparation containing 0.15 per cent. iodine. The I.K.S. itself has a director and the triumvirate of pharmaceutical, medical and pharmacological experts previously mentioned. Numerous experts in special fields also collaborate with the I.K.S.; they include the professor for ear, nose and throat diseases at Zurich, a professor of dentistry, a homoeopath, two professors of veterinary medicine and, be it noted, an expert in surgical equipment, druggists' sundries, etc., and the director of a Zurich acoustics laboratory, which has been testing hearing aids on behalf of the I.K.S. since 1947.

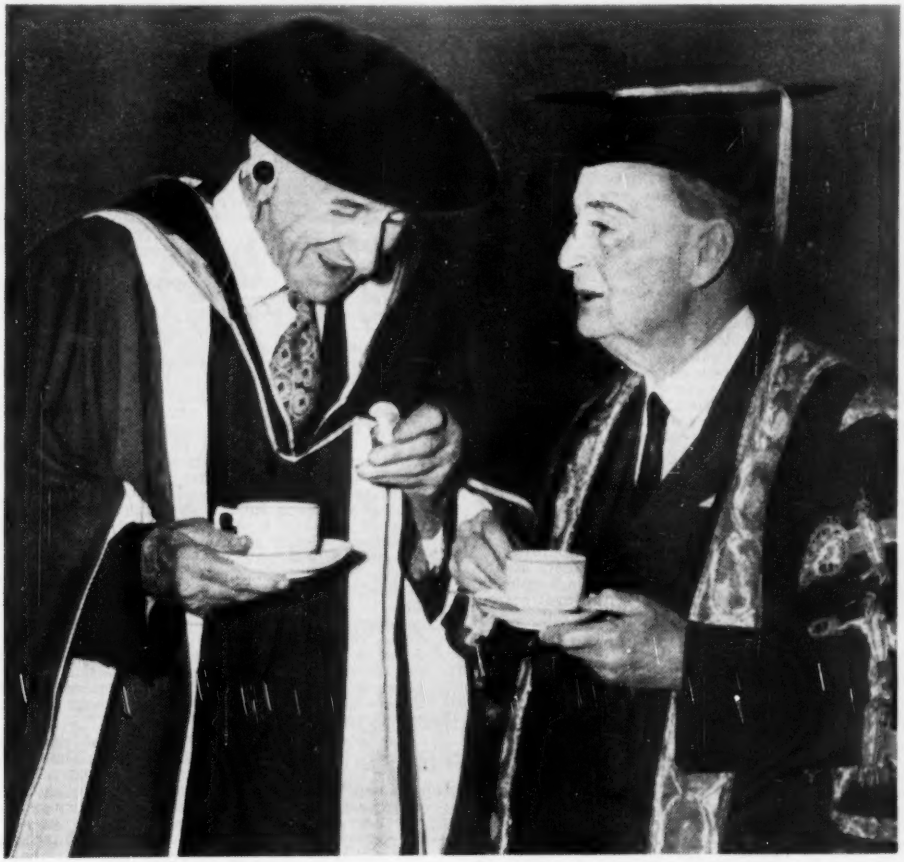
Vitamin preparations are assayed by biological, microbiological and chemical methods at the Institute of Physiological Chemistry at Basle University. Only 5.5 per cent. of 331 vitamin preparations were rejected

1. For a description of Swiss Government, see Viscount Bryce's "Modern Democracies," Vol. I, p. 376. An English translation of the entire Swiss Constitution appears in "Source Book on European Governments" (1937), William E. Rappard, et al.

2. Most of my information is taken from two publications: "Tätigkeitsbericht der Interkantonalen Kontrollstelle für Heilmittel, Bern, 1951," and "50 Jahre Interkantonale Kontrollstelle für Heilmittel, Bern." The latter will be referred to as "the anniversary publication."

in 1951. Hormone preparations are sent to the University of Lausanne for estimation. Manufacturers of such preparations (including cosmetics containing sex hormones) are given a choice: If they agree to bear the heavy cost of **annual** re-examination of their product, they are permitted to state in their advertising material that it has been assayed by the Swiss Hormone Institute at Lausanne, and also the quantitative result of the assay. Otherwise, hormone preparations are examined twice in five years, but in this case, no mention of the fact may be made in advertising literature. Certain concessions are made in the case of preparations containing more than one hormone. The report for 1951 shows that of 38 hormone preparations submitted, 6 were found deficient, viz., 3 oestrogenic, 1 gonadotropic and 2 of 6 insulin preparations. In previous years insulin preparations had been incredibly bad; of 47 samples tested in 1948 and 1949, 43 "showed no insulin activity" (sic).

The Institute for Hygiene and Bacteriology of Berne University assays antibiotics, using as guide the "Compilation of Regulations for Tests and Methods of Assay and Certification of Antibiotic Drugs," issued by the U.S.A. Food and Drug Administration. More than half the Penicillin ointments and tablets[3] assayed since 1947, have been found deficient in antibotic activity, a serious matter, since this favours the development of Penicillin-resistant bacteria. The Institute's report blames inefficient manufacture and packing for the low stability of the offending products. Of the penicillin products for injection on the Swiss market, 94 per cent. come from the U.S.A., and it is a handsome tribute to the



The Chancellor of the University, Sir Charles Bickerton-Blackburn (at right) in conversation with Sir Robert Garran, Chairman of the Canberra University Council, at the Civic Reception at Sydney Town Hall.

—Illustration by courtesy of "The Sydney Morning Herald."

3. This probably includes lozenges.

American Food and Drug Administration that all of these passed muster. In all, 23 per cent. of 53 antibiotics were rejected in 1951 on the grounds of insufficient activity. This does not include preparations rejected by the three experts of the I.K.S. on therapeutic grounds. For example, a manufacturer who included both Terramycin and Chloramphenicol in a lozenge for throat infections had his product rejected because he could not furnish a rationale for this combination. Cardiac glycoside substances are assayed in the Pharmacological Institute of Berne University. In 1951, 2 of 28 preparations exhibited insufficient activity, and one was quite inactive.

However, 86 per cent. of the analyses of proprietary remedies are carried out in the Swiss Pharmaceutical Society's chemical laboratory in Berne. Some of the information yielded by these tests should disillusion those who believe that pharmaceutical industry is everywhere in capable and responsible hands. A new organic iodine preparation contained 20 per cent. less iodine than its manufacturers claimed, while tampons were found to be impregnated with twenty times the declared amount of iodine. Some calcium gluconate ampoules contained one-quarter of the stated strength. A guaiacol injection did not indicate that it contained 2 per cent. resorcin, nor did an injection product for heart diseases mention a phenazone content of 0.4 Gm. per ampoule. One of two samples of an anti-rheumatic ointment contained methyl salicylate and guaiacol, another did not. Certain tablets were marketed in two forms, one with codeine, one without; but when the laboratory tested a sample of each form, it found that each bottle contained a mixture of both kinds of tablet. Mould and dead insects have been found in compound powders. Many manufacturers do not test their raw materials for purity. Thus, when the I.K.S. found 30 per cent. liquid paraffin in a mixture of "volatile oils," further investigation showed that the adulteration was already present in the "pure" oils which the manufacturer had procured elsewhere. All these cases were discovered in 1949[4]. Equally serious cases appear in the 1951 report; e.g., live insects in a herbal preparation, and undeclared sulphaguanidine in tablets against diarrhoea. The 1949 report also said: "It is astonishing with what facility drugs temporarily in short supply are omitted or replaced by other, usually cheaper or inferior drugs, even when they are essential to the purpose of the preparation." Approval of any remedy must be renewed after five years. Not content with keeping a continuous check on proprietary remedies in this way, the I.K.S. also looks into the composition and packaging of samples of already approved remedies procured (without the manufacturer's knowledge) on the open market. In 1951, 861 analyses were carried out, new remedies accounting for 491 of these. (1291 remedies were submitted to the I.K.S. for consideration or reconsideration.)

It is of interest in this connection to mention some of the points made by Prof. Paul Casparis, the pharmaceutical expert on the I.K.S., in his essay: "The Pharmaceutical Evaluation of Proprietary Medicines"[5]. He mentions the necessity for qualitative and quantitative analysis of these remedies, and of determining in the case of pills, ampoules, etc., whether the doses are evenly divided. Ingredients must conform to the standards of purity of the pharmacopoeia or the recommendations of the literature. Bearing in mind the natural instability of many drugs, and the fact that proprietaries often spend long periods on the shelf, one must guard against inactivation or the formation of toxic substances. Hence the need for the re-examination of already approved remedies. Casparis cites cardiac glycosides, nitric and nitrous acid esters, incompatible combinations of alkaloids and oxidising agents ("frequent") and of gastric enzymes with alkalies. A few months after this was written, the I.K.S. was to find a veterinary preparation containing spirit of nitrous ether in alkaline solution.

Attention must also be paid to the unwanted side effects of solvents such as certain glycols and of boric acid when used as preservative. The pharmaceutical evaluation of proprietary medicines must have regard to the suitability of the container, e.g., amber or clear glass, lead content in ointment tubes and to the wording of labels. In 1951, a total of 857 **new** remedies of which 45 per cent. were made outside Switzerland, were submitted to the I.K.S. for approval and 15 per cent. were rejected. It is encouraging to note that the report says: "This percentage is somewhat more favourable than that of the last few years." Perhaps the mere existence of the I.K.S. acts as a deterrent to the would-be adulterer or mis-brander of proprietary medicines.

Whereas false statement of constituents was a reason for rejection in 21 cases in 1951, and inefficient manufacture the ground for rejection in 40 cases, the I.K.S. turned its thumb down at 17 preparations for the following reason: "Lack of justification for the combination; lack of proof of harmlessness (experimental evidence)."

This brings me to the therapeutic aspect of the I.K.S's examination of a proprietary. The principle behind this is stated as follows: "When proprietary medicines contain new drugs or when well-known drugs are recommended for purposes in respect of which their applicability and harmlessness is not established, the experts are prepared to consider them only if the maker supports his claims with unexceptionable evidence. To this end, experimental evidence and clinical reports, which must contain references to toxicity or side-reactions, are required." But it appears that, in practice, the experts are not as exacting as this would suggest. Prof. Walter Frey writes:[6] "With good technique and well-arranged experimental conditions, clinical appraisals furnish important information. The hospital is asked to arrange an 'ad hoc' 'experiment.' A delicate matter in itself. Sick people don't go to hospital in order to be experimented upon. Only if precise chemical analyses and favourable pharmacological and toxicological reports are available, is it possible to proceed with the careful application of a new remedy. . . . Therefore one cannot simply gather evidence, i.e., shift the responsibility onto the other person. As an expert on the I.K.S., one has occasionally to judge for oneself, applying analogies, biological generalisations, probabilities. The lawyer's opinion is always important. The variety of composition of the panel of experts precludes a one-sided attitude."

In 1951 the panel rejected several remedies for hyperacidity containing synthetic ion-exchange resins. These substances have been used industrially in the past and their purification for pharmaceutical purposes is expensive. The I.K.S., therefore, demanded, but did not get, evidence of suitability as antacid and absence of toxicity to the stomach, the intestines and the kidneys.

The number of clinical investigations actually carried out on behalf of the I.K.S. appears to be comparatively small. According to the 1951 report, 4 investigations were carried out at the ear clinic of Zurich University, one at a gynaecological clinic and two at dermatological clinics. But a deodorant ointment containing 30 per cent. boric acid was rejected out of hand, because of the toxicity at this high concentration. There is undoubtedly a serious problem for the advocate of proprietary medicine control in this matter of clinical trial; the purpose of control is the elimination of quack remedies, but if demands for proofs of therapeutic efficacy are made too exacting, the small concern with

4. Quoted in "Die Heilmittel Kontrolle in der Schweiz," Pharmazeutische Zeitung-Nachrichten, Hamburg, No. 15, 1951, p. 352.

5. In the anniversary publication "50 Jahre Interkantonale Kontrollstelle . . ." op. cit. p. 16. ff.

6. In the anniversary publication, cited above, p. 29ff.

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little capital will find it not worth its while to introduce new remedies at all, and medical progress will be retarded. It seems to me that where, in view of the success of similar preparations, it is likely that a doubtful remedy would live up to its claims, the public interest demands that the remedy be allowed on the market. Perhaps, in such cases, a probationary period, or "prescription-only" restrictions could be applied and only very restrained language permitted in advertisements. If I may be permitted to digress a little further, I would like to quote the opinion of Prof. G. Kärber, who, in his capacity of Director of the Department of Physiology and Pharmacology of the Robert Koch institute for Hygiene and Infectious Diseases, Berlin-Dahlem, has had many years' practical experience of proprietary medicine control in Germany. He writes:[7] "The collation, for example, of the pharmacological and clinical data is insufficient for the purposes of an official evaluation of a remedy. Precise information about the nature of the medical testimonials is also required. Side by side with the independence of the testifying expert conscious of his responsibilities, there exists a not always pleasing interlacing of medical science and practice with commerce. Thus the testimonial of a hospital physician who is, at the same time a paid employee of a drug manufacturing concern, can never be by itself decisive in the evaluation of a new remedy[8]. It is equally obvious that no real weight can be attached to the testimonials of young assistants or medical probationers, given without the knowledge of the director of the clinic or hospital."

As I am assured that large-scale clinical trial of new proprietaries in Australia would be quite impracticable at the moment, armchair appraisers of foreign clinical reports on new remedies would have to take these points into consideration. It is interesting to note that in Germany, between 1947 and 1948, the ingredients of 160 ointment bases were tested for irritability at the Public Zinnowwald Hospital, Berlin-Zehlendorf.[9] The patients' comments are not recorded.

Let me return to the I.K.S. So far, I have mentioned pharmaceutical and medical reasons for rejecting proprietaries. Unsatisfactory advertising furnishes a third main ground for rejection. Forty-seven proprietaries made unsubstantiated claims for their therapeutic value, and there were nine cases of exaggerated or boastful advertisement and incorrect designation, in five of which this was the **sole** ground for rejection. Finally, one remedy was rejected because its price amounted to an exploitation of the public.

Lest the impression be created that everything in the Swiss herb garden is lovely, I must discuss some of the difficulties faced by the I.K.S. Writing on the topic "Popular Remedies and Public Advertisements for Remedies," one of the I.K.S. advisers admits:[10] "We are forced to compromise between the aim of placing scientifically unexceptionable medicines into the hands of physicians and the public on the one hand and, on the other hand, let the public have the remedies it wants, or, to put it more precisely, the remedies which the manufacturer wants to sell." And again: "In Switzerland, we must make concessions to the widespread demand for modes of treatment grounded in tradition." The censorship of advertisement texts presents many problems, though the I.K.S. from time to time issues detailed rulings, e.g., popular remedies containing extracts or tinctures of hamamelis may only be recommended for conditions in which the local action of a tannin is of value. Any further claims must be supported by medical evidence. But whereas Australian practice is generally restricted to the enforcement of prohibitions against the use of words such as "prevent" and "cure" in respect of certain diseases, the Swiss realise that mere verbal changes often suffice to circumvent such regulations and say that "the diversities of language cannot be squeezed into formal classifications."

It is not really relevant to the thesis of this paper to mention that the I.K.S. is responsible for drawing up the Swiss analogue of Victoria's "Schedules to the Poisons Act," i.e., the classification of substances according to their conditions of sale. But it has been suggested to me that the attitude of the I.K.S. to the scheduling of substances such as Aspirin and Penicillin, where commercialism may play a part, would be a good indication of its freedom or otherwise from pressure-group influence in the sphere of evaluation of proprietary medicines. This test may be misleading because, whereas interested parties are represented on the commission to which the I.K.S. delegates the task of drawing up the lists of restricted substances, no trade interests have ever succeeded in obtaining a seat alongside the scientists who evaluate proprietary medicines. But for what this information is worth, I regret to report that a class of shopkeepers known as the "Drogisten," who stock grocers' lines, some hardware, cosmetics and medicines which are in principle designed to prevent rather than cure disease, have in recent years, and with the support of some of the cantons, wrung important concessions from the I.K.S. They may sell, inter alia, aspirin and tincture of iodine, as well as admixtures containing such substances as codeine, ephedrine and extract of belladonna, though in many cases stringent regulations are enforced concerning labelling with dosage and directions for use. Antibiotics[11] and sulphonamides, as well as open-chain ureides are restricted to chemists, and to sale on prescription.

Two further criticisms emerge from the I.K.S.'s own publications. Prof. Frey writes:[12] "This publication shows that in the course of 50 years, the I.K.S. has wrought much that is new and generally useful. But we shall only be quite satisfied when all the proprietary remedies on the market can be examined fully and repeatedly and when what is proposed or rather "recommended" by the I.K.S. is really always carried into effect. The second part of this lament probably concerns the fact that the individual cantons are not **bound** to adhere to the rulings of the I.K.S. Unfortunately, I have no detailed information about the extent to which I.K.S. decisions are ignored, but in most cases of conflict it seems to be the lists of restricted substances rather than the rulings on proprietary medicines which are disregarded.[13] The other part of Prof. Frey's complaint reflects the fact that the analytical laboratory can no longer cope with the work demanded of it, and negotiations were in progress in March, 1952, to have some analyses carried out elsewhere. In view of the fact that the analysis of medicinal substances for forensic purposes may take from three days to three weeks for each analysis, and requires experienced personnel,[14] it is not surprising that the laboratory cannot undertake the 1200-1500 analyses required annually.

7. "Die Duchführung der Ministerratsverordnungen über die Herstellung von Arzneifertigwaren (1943-1945)" in Pharm. Zeit.—Nachricht, op. cit. No. 16, 1951, p. 377.

8. In Australia, a comparable case would be that of experts who engage for a fee, in consultative work for firms whose products they subsequently sit in judgment upon.

9. "Die amtliche Prüfung neuer Arzneifertigwaren in Berlin (1947-1951)" in Pharm. Zeit.-Nachricht., op. cit. No. 9, 1952, p. 207.

10. Dr. W. Steiner, writing in the anniversary publication, op. cit. p. 33.

11. I do not know whether there are any exceptions to this.

12. In the anniversary publication, p. 29.

13. In 1949, a regulation in force in the canton of Unterwalden said that for the classification of restricted substances, the principles and lists of the I.K.S. were applicable **as a rule**, but that the health authorities were prepared to issue supplementary lists on request. (See "Die Drogistenbewegung in der Schweiz," in Pharm. Zeit.-Nachricht, No. 9, 1951, p. 194.)

14. According to a paper: "The Chemical Analysis of Medicines," by the Chief Chemist, Dr. Adolf Bürgin.

I would commend to your attention this statement by the Director of the I.K.S.: "The constitutional basis for federal regulation of the entire trade in medicines is lacking; but, in these years, the cantons have proved that even if the federal structure of our country is fully taken into account, the setting up of control over medicines which is based on common principles, is possible."

II.

In Australia, discussions on proprietary medicine control usually rediscover the melancholy fact that the Federal Government has no effective power in this field. The next thing that is said is that, since we cannot persuade the States to act in concert, we had better do nothing at all. If this paper has any merit, it is that it suggests a way out of this impasse. But I had better consider previous suggestions in this field first. They may be divided into:—

(a) Proposals to set up voluntary organisations or committees based on professional associations such as the B.M.A. or P.A.A.N.Z. (and having the prestige of these associations behind them) in order to appraise the products of any manufacturer who cared to submit them for consideration and pay the required fee. Such a proposal was urged, very persuasively by N.C. and Jean M. Manning at last year's Brisbane Conference of A.N.Z.A.A.S.,[15] and less persuasively by the present writer.[16] Such committees are certainly an excellent idea in the absence of Government intervention in this sphere, and the history of the Council of Pharmacy and Chemistry of the American Medical Association shows that they could be, to some extent, complementary to State action. For example, the publication, "New and Non-official Remedies," would not have been published by a Government department in the U.S.A., and much of the American legislation concerning medicines is a result of pressure by the Council.

However, by themselves, such voluntary organisations afford no protection to the public against some makers of quack remedies, who would not dream of submitting their products to a body such as the Mannings' "Council of Chemistry, Pharmacology and Therapeutics." Moreover, in 1947, a most disturbing book by Howard W. Ambruster, appeared in the U.S.A. Entitled "Treason's Peace. German Dyes and American Dupes," it devotes several chapters to what purports to be the inner history of successful efforts by certain sections of the American drug trade, not only to stultify proprietary medicine legislation such as the Harvey Wiley Food and Drugs Act, and the Tugwell Bill, but also, it is hinted, to corrupt members of the American Medical Association and the Council of Pharmacy and Chemistry.[17] Ambruster's charges relate particularly to A.M.A. approval of adulterated sulphathiazole tablets in 1941 and to toleration of untrue advertising on behalf of aspirin, between 1929 and 1934. I cannot vouch for Ambruster's accuracy, but his account is partly documented, his book received fairly favourable reviews from reputable American periodicals, and he was sufficiently sure of his case to challenge some of the persons named to sue him for libel. There is, then, at least a case for believing that professional associations from which voluntary committees would be recruited, stand in danger of infiltration and influence by interested parties.

(b) The proposals for Federal Government intervention have, of course, involved a change in the Constitution. In principle, this may be brought about either by the application of Sec. 51 (xxxvii) which involves a surrender of power by a State or States to the Commonwealth Parliament, or by Sec. 128 of the Constitution, i.e., by referendum. Both methods have been suggested. For instance, the report of the Royal Commission on Health, 1926, recommended that "The Parliaments of the several States should refer to the Parliament of the Commonwealth the matter of the control of imported foods and drugs and of such foods and drugs of Australian origin as are or may be the subject of interstate trade, and that the Parliament of the Commonwealth should thereupon make laws for the control and regulation of such foods and drugs."[18] In 1927 a Commonwealth and States conference on Foods and Drugs Standards, unanimously requested the Federal Government to invite State Parliaments to transfer their powers in respect of foods and drugs to the Commonwealth. Nothing came of this.[19]

After reviewing these attempts to achieve uniformity, the report of the Royal Commission on the Constitution, 1929 (Sir Hal Colebatch dissenting) made the following recommendation: "We recommend that the Commonwealth be empowered to legislate with respect to drugs and standards of foods. Effect could, we think, be given to this recommendation by inserting in Section 51 of the Constitution the following paragraph:

(ix b) Drugs and standards of foods.[20]

Of course this has not been done, either. Furthermore, I predict, with some confidence, that no such amendment to the Constitution will be made. Moves by private Members to initiate alterations to the Constitution are invariably abortive, and the likelihood of interesting the electorate in a question which is comparatively technical and much less urgent than other constitutional amendments which have been rejected in the past, is remote. Anyone who doubts this, even after 20 out of 24 referendum proposals have been rejected by the electors and three times this number did not even reach the referendum stage, is invited to examine the statistical data in Prof. R. S. Parker's definitive paper: "The People and the Constitution."[21]

Briefly, Parker's explanation for the failure of referenda involves the intrusion of party politics, both Federal and State, the hostility of some State politicians, and apathy and ignorance of the issues on the part of the voters. The history of attempts to induce State Parliaments to "refer" power to the Commonwealth under Sec. 51 (xxxvii) of the Constitution hardly gives more ground for optimism. Such proposals have been unsuccessful not only in the case of foods and drugs standards, as mentioned previously, but also in several other cases—hallmarking of jewellery, wartime powers in 1915 and 1942, and air navigation. The section has been successfully used in conjunction with Sec. 19A of the Australian National Airlines Act 1945-47, and the Commonwealth Powers Acts 1943, of New South Wales and Queensland, to establish certain airline services, and for some time petrol rationing in N.S.W., Queensland and Western Australia rested on joint Federal-State legislation. However, although it has recently been argued that a reference of power under Sec. 51 (xxxvii) would be revocable under certain circumstances,[22] there is a substantial body of legal opinion which holds that States which grant powers to the Commonwealth in this way can never subsequently withdraw these powers from Commonwealth control.[23]

One can readily understand the reluctance of State

15. In "Pharmaceutical Bouillabaisse," Austral. Journ. Pharm. N.S., 29, 833.

16. Ibid. p. 854.

17. Chaps. XI and XII, passim, esp. pp. 213, 231, 240.

18. Parliamentary Papers, General Session, 1926-27-28, Vol. IV, p. 30.

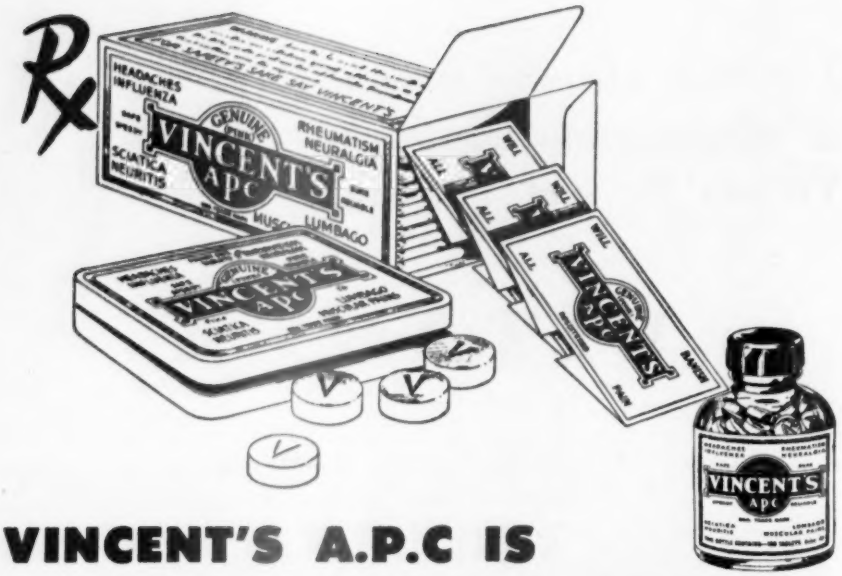
19. See report of the Royal Commission on the Constitution, 1929, p. 174, and Austral. Journ. Pharm., 1927, p. 803.

20. Report, op. cit., p. 266.

21. In the symposium: "Federalism in Australia," 1949, ed. Reichenbach, p. 135ff.

22. R. Anderson, Annual Law Review, Univ. of West Austral. Vol. ii, No. 1, 1951, p. 2ff.

23. Anderson cites many proponents of this view, ibid.



VINCENT'S A.P.C IS PREPARED TO THE ORIGINAL HOSPITAL PRESCRIPTION!

Genuine VINCENT'S A.P.C Powders and Tablets are prepared to the *original hospital prescription* first used by the medical superintendent of one of Australia's largest public hospitals!
This famous hospital formula is a safeguard for all who are called upon to prescribe or recommend such treatment. It has stood the test of our 30 years' experience in the medical world as a safe and effective analgesic and sedative. On account of its perfect safety and freedom from after-effects, it has held the confidence of the medical profession for over 30 years.

RECOMMEND VINCENT'S A.P.C WITH CONFIDENCE!

Parliaments to make a **permanent** transfer of some of their powers to Canberra, even though a concurrent power to legislate in the same field[24] would be retained by any State Parliament which agreed to the transfer. Mr. Ross Anderson[25] argues that their financial difficulties under uniform taxation might make State politicians somewhat more willing to let the Federal Government assume some of their functions. I am afraid that I have seen no evidence for this in recent months, although there have certainly been many complaints by State Premiers that uniform taxation is impoverishing their Governments. However, if State Parliaments **could** be persuaded to let the Commonwealth legislate on proprietary medicines, then for political and financial reasons this would be a much better solution to our problem than the suggestions I propose to make. These suggestions presuppose that such a transfer of power is **not** feasible at the moment. It is perhaps significant that the Swiss, whose constitution has been amended no less than 34 times between 1874 and 1948,[26] chose to regulate proprietary medicines through intercantonal agreements and not through their Federal Government.

Could we not emulate the Swiss and **gradually** approach uniform control of the proprietary medicines by way of an agreement between only **some** of the States to introduce legislation requiring that proprietary medicines manufactured within their boundaries should have the approval of a body of experts recognised by all the contracting States? What I have in mind is, firstly, a conference between the Chief Health Officers, of, say, Victoria, New South Wales and South Australia, and thence an agreement that the Advisory Committee of experts which now advises the Victorian Minister for Health on the worth of proprietary medicines should be reconstituted in such a way that, instead of the chairman being Victoria's Chief Health Officer and the other members Victorians **as a matter of course**, all the members might be jointly nominated by the Health Ministers of the participating States. Instead of the fees of the Advisory Committee's members and the other expenses being voted by the Victorian Parliament as part of the Health Department's estimates, the costs of the reconstituted committee could be shared equitably between the participating States. (I might add that the Commonwealth Parliament has power to make financial grants to States, under Sec. 96 of the Constitution, and has frequently done so.[27] It is also interesting to note that, in 1951, the I.K.S. received a grant of 40,000 fr.[28] from the cantons, whereas registration fees and other sources yielded an income of nearly 300,000 fr.) Having reached agreement on these points, the Chief Health Officers could then press the Ministers in charge of their departments to introduce the required legislation in the State Parliaments.

Bearing in mind the existence of State parochialism and conservative Upper Houses, it seems to me that an agreement between **some** of the States, leading to complete uniformity in legislation **in the long run**, is all that can be hoped for. In general, the more modest a proposal, the more likely it is to be carried out. For this reason, I am not suggesting that we should entrust such a committee with the drawing up of poisons schedules; too many eggs would have to be broken to make this particular omelette. Secondly, I would suggest that the final decision on whether a remedy is to be accepted or rejected should be left to the Chief Health Officer of the relevant State, and not to the Advisory Committee. Clearly, this might, on occasions, lead to different rulings in different States, and to parliamentary lobbying by aggrieved manufacturers, thus undermining the uniformity which these proposals are designed to secure, but one has only to read the Parliamentary Debates on the Victorian Health (Patent Medicines) Act 1942, to discover how unwilling politicians of all parties are to permit the creation of Boards with legislative powers.[29] Ex hypothesi, the participating States will all have a voice in the nomination of the Advisory Committee's experts, and one would expect that the committee's recommendations would be acceptable in the vast majority of cases.

In order to avoid time-consuming and expensive Interstate travel by members of the committee, it is suggested that, if possible, the Health Ministers should agree to nominate a nucleus of permanent members resident in one State (preferably the present Victorian Advisory Committee, together with a bacteriologist, a clinician and an analytical chemist) with power to consult authorities in other States on particular problems. As far as truthfulness in advertising and labelling is concerned, the committee should judge each case on its merits, as is now done in Victoria.

Since "socialism" and "bureaucratic control of industry" have now become bogey-words, it may be wise to conclude this already over-long paper by saying something about the politics of proprietary medicine control. If a government embarks on economic planning, then, undoubtedly, it **may** use a regulating authority for proprietary medicines as an instrument for carrying out its plans in this field. In the "German Democratic Republic" (the Soviet-controlled part) a regulation issued on April 16, 1951, requires registration for chemists' own lines, for reasons connected with economic planning, rather than public health. The official explanation said, inter alia: "The drugs, chemicals and other raw materials allotted to the pharmacies were not used for dispensing prescriptions, as intended, but for the preparation of these chemists' own lines. Furthermore, products of pharmaceutical industry which are much more economically manufactured, are often available.[30] "It has also been claimed that, where a private firm and a State concern competed in the manufacture of certain kinds of preparations in the Soviet zone of Germany, regulations ostensibly designed to control proprietary remedies were being used to refuse registration to all the competing private firms' products, even those which it alone manufactured. I cannot vouch for the truth of this last statement, which is taken from a West German pharmaceutical journal.[31]

For a democrat, whether socialist or not, the important principle to be observed in Australia is that the Health Departments and any advisory committee on proprietary medicines such as I have suggested, should restrict themselves to giving effect to legislation enacted after full discussion in Parliament. Perhaps I should be more specific. It would be possible, unless certain safeguards are adopted, to use proprietary medicine control by the State to drive the small manufacturer out of business. Indeed, in West Germany, some of the advocates of proprietary medicine control by the State are professedly seeking the extinction of "back-yard laboratories." Chemists often dislike the small manufacturer because his products have not the

24. In cases of conflict, the Federal law would prevail.

25. Op. cit.

26. K. C. Wheare, Modern Constitutions (1951), pp. 136-7.

27. The Commonwealth may attach conditions to these grants, e.g., that they should be applied to proprietary medicine control.

28. Circa £A5000.

29. Victoria, Parliamentary Debates, Vol. 213, p. 826. Mr. Macfarlan: "Unless the strongest reasons can be given in future I shall refuse to support the appointment of any Board." Similar views were expressed by Mr. Mullens and Mr. Everard.
In any case, for reasons connected with Sec. 92 of the Constitution, proprietary medicine legislation would need to state fully the purposes for which control is desired, e.g., to prevent the manufacture of products deleterious to human health. For the same reasons, provision for appeal to the courts would probably have to be made.

30. Pharm. Zeit.-Nachricht, No. 29, 1951, p. 512.

31. Pharmazeutische Nachrichten, Hamburg, No. 23, 1950, p. 622, "Ein Blick in die ostzonale Apotheke." The contributor is anonymous.

reputation bestowed by a well-known name, nor the money backing to resist damages claims, and because they are often ephemeral—all the rage one month and dead stock thereafter. The big manufacturing firms' interest in having its smaller rivals eliminated is obvious enough. Over-enthusiastic Government planners may also want to eliminate the small manufacturer, to conserve raw material, reduce the cost of distribution and generally achieve "rationalisation." All the same, there may be large numbers of very useful remedies made only by small manufacturers, and there are other, at least *prima facie* objections to a policy of eliminating the small firm; the consumer's choice is restricted without his consent, prices may be kept artificially high by price agreements which are easier to maintain among a few firms than among many. There is a greater danger of amalgamation, leading to monopoly if the small concerns are eliminated. Thus, since all consumers of proprietary medicines would be affected, it is important that neither the civil servants nor the representatives of chemists or manufacturers on any advisory committee for patent medicines should use their powers to discriminate against the small concern, as it were, behind Parliament's back. Such a policy should only be adopted if it has been discussed and embodied in legislation by the people's representatives in Parliament.

Some useful safeguards against such misuse of power by the advisory committee or the health departments include: the right of appeal to a Supreme Court Judge, as provided by the Victorian legislation,[32] the vesting of discretionary power in the Chief Health Officer, rather than in the Advisory Committee, so that decisions are subject to the scrutiny of the Minister for Health, who may be questioned about them in Parliament; the cost of registering a product must not be so high as to discriminate against the small firm. I think that pharmacists' and manufacturers' representatives deserve a place on the committee I have advocated, partly because of their familiarity with the technical problems of drug manufacture and partly because this would make the whole scheme more acceptable to the manufacturers of pharmaceutical products, whose influence on politics and the press is not to be under-rated. But certainly the scientists with no commercial axe to grind should be in the majority.

If Switzerland, with a population of only 4½ million people, speaking three languages, and divided into 25 cantons, could construct an institution as comprehensive as the I.K.S., it would be shameful if we could not obtain uniform proprietary medicine control in Australia.

Acknowledgments.

I am indebted to the following: Mr. F. C. Kent, Secretary of the Pharmaceutical Society of Victoria, who placed German and Swiss publications at my disposal; M. Jules Farine, Director of the T.K.S., for prompt attention to a request for information; D. E. Greenhalgh and R. Hatch, B.A., for advice; and N. C. Manning, B.Sc., F.P.S., for constant encouragement and helpful criticism. I am also grateful to a member of the Bar, who wishes to remain anonymous, for giving me reason to think that proposals for Interstate proprietary medicine control stand a sporting chance of surmounting the hurdle of Sec. 92 of the Constitution.

My errors must not be attributed to anyone else.

32. My reason for diverging from Swiss practice here is well stated by Prof. L. F. Crisp, in "The Parliamentary Government of the Commonwealth of Australia, 1949," p. 280.

"It is shown . . . that, as time goes on, administrators and administrative tribunals concerned with particular Acts sometimes gather an impetus and develop a system very decidedly their own, and bearing only an imperfect resemblance to the original legislative scope and intent. This being so, the Courts may be in practice the most appropriate—some would say the only adequate— instrument for protecting the individual or interest, on appeal, against injustice due to the divergence from a Statute of its ultimate elaboration and application."

Also, appeal to the Courts is probably required because of Sec. 92.

LESSONS FROM PATENT MEDICINE LEGISLATION IN VICTORIA

By Associate Professor F. H. Shaw.

In 1942, an Act to register patent medicines was proclaimed. In brief, it means that all patent medicines, patent according to the definition of the Act, which comply with the Pharmacy and Health Acts, shall be registered. A committee of four, a pharmacologist, a pharmacist, a trade representative and an officer of the Health Department, was set up to advise the Chief Health Officer whether the preparation complied with these Acts. In reality only three conditions had to be fulfilled:

(a) The preparation is to be labelled according to poison regulations.

(b) No claim of a therapeutic nature to be false and misleading.

(c) No claim at all could be made for certain serious conditions, e.g., T.B., cancer, blood pressure, etc.

For four years I have been a member of this Committee, and it is in view of this experience that the following statements are made.

In the first place, when the legislation has been consumated by the publication of the Register, it will be obvious that the legislation has been successfull since

(a) A few, a very few, worthless preparations will not be registered.

(b) Most preparations will be registered, but with wild claims eliminated.

(c) The contact of the trade with the Committee has had an educational value which will prove of incalculable benefit to the former.

The legislation has been unsuccessful in the following few minor points:

(a) One or two additional members (legal and clinical) to the committee would have been appreciated.

(b) A few preparations, which I feel sure will be shown by time to be worthless, in the light of more recent scientific knowledge, have been recommended for registration and cannot be removed from the Register as there is **no provision for review. This is perhaps the most important omission from the Act.**

I have received great pleasure from my work on the Committee, I shall also feel a great satisfaction when the Register is published. Amusement has also not been lacking. When the Act was first gazetted it was assailed by the trade and to a slightly lesser extent, but more regrettably by several semi-official bodies. Abstaining from this attack by the trade were the representatives of several firms which, by general consent, are regarded as leaders in this commercial sphere. We had no complaints from that multi-headed, single-voiced personage —the man in the street.

What now is my final opinion on patent medicine legislation? I think that if you believe in legislation of this nature, then modify the Victorian Act slightly and you have what you want. My own opinion is, however, that there is a better way to tackle the problem. It is not an easy matter for a committee to decide the **exact** merits of **all** medicines in **strict** conformity with the law. Medicine is not an exact science, members of the profession disagree in practice, the disagreement is certainly more marked at the bottom than at the top. Again it is said that some people need placebos for psychological reasons. Others say that the public has a right to buy what it likes, provided it does not harm itself. In all of this I concede a grain of truth. Therefore I suggest an Act based on the following principles:

A Committee of Investigation, set up by State or

You . . . and New Gibbs S.R.

AS YOU WELL KNOW, it is a fact that more teeth are lost through gum troubles than decay . . . that teeth are only as safe as the gums they grow in.

That's why you should recommend a toothpaste especially designed to care for *gums* as well as teeth . . . Gibbs S.R.

New Gibbs S.R. is the only leading toothpaste that contains Sodium Ricinoleate . . . a toothpaste that gives protection as well as whiteness.

Gibbs S.R. has a clean refreshing flavour—a rich foam and a smooth texture.

By recommending Gibbs S.R. for gums and teeth, you will be doing all you can to give your customers full dental protection.

SR.58.FPT

Federal Health Departments, which will give a stamp of recommendation to **really worthwhile** preparations. Such department to make known by wide advertising that such recommended medicines are efficacious, that other medicines are probably inactive, or **even fruadulent**, but are at least harmless, but, as it is your money, take your pick.

The advantages of such legislation and procedure would be—

(a) A simple Act.
(b) Little administration.
(c) Even less policing.
(d) No objections from anyone—except the other members of the Symposium who have their own ideas to put forward.

Discussion on Papers of W. Landers and Professor Shaw

Question: A chemist has lines of his own. Are these given any special treatment under the Victorian Patent Medicines Act?

Answer: If put up as proprietary medicines, they must be registered. Medicines extemporaneously dispensed are exempt.

Mr. Landers said that in Switzerland chemists' own lines had been recently exempted.

Mr. Ramsay (N.S.W.): Emphasis in Switzerland seems to be on the final product. Is there any control of the person in charge of manufacture?

Mr. Landers: So far as I know there is not under I.K.S., but I understand individual cantons have separate controls.

Mr. R. G. Smith (Vic.) said that in 1949-1950 he visited Switzerland on several occasions, and lived with Swiss families. He got to know something of the general set-up. The thing that he was struck with was the difference in the Swiss Constitution in action and the Australian. Swiss seemed to be very much more politically minded than the Australians. Mr. Smith said he agreed with a great deal of what Mr. Landers had said, but disagreed as to the probability of getting Interstate collaboration in Australia. Consultation between two or three States might be possible.

Mr. Smith said that the Victorian Patent Medicines Act was passed in 1942, but was not proclaimed until 1946 or 1947. The Drug and Allied Trades Council, of which the Federated Pharmaceutical Service Guild was a member, had agreed upon certain amendments to be suggested. These were discussed with the Chief Health Officer, Victoria. The proposed amendments then went on to the Minister for Health, but up to the present time there had been no amendments, and there was little immediate prospect. There were amendments which would produce some of the benefits which Mr. Landers had described.

Mr. A. W. Callister, Victoria, said there was difficulty in getting co-operation between six States, and uniformity was difficult to attain. There was, however, a growing tendency to consultation between the Health Departments in each State. Representatives of the departments held periodical conferences. There was also a constant trend towards uniformity of legislation. He thought it was a reasonable proposal with prospects of ultimate success.

Mr. Hall (Vice-President, N.S.W.) said there were one or two questions which had exercised the minds of New South Wales members. Pharmaceutical chemists were respected by the public. They were called upon to advise on the suitability of the medicines they sold. It was time a brake was put on the way in which medicinal preparations were being made, advertised and sold. The pharmaceutical chemist was being exploited. A demand was created by heavy public advertising, and they were compelled to carry the advertised lines. He was firmly convinced that reform was necessary and that provision should be made for formulae for every medicinal preparation to be submitted to some authority for approval or veto before being distributed to the public. Notice of approval should be placed on the container of the preparation. He did not suggest that marketing of an unapproved preparation should be prohibited.

Professor R. H. Thorp (N.S.W.) said as a pharmacologist he was more concerned with the safety of the public than the prices at which medicines were sold.

In Australia they were very much behind Great Britain which had a Therapeutic Substances Act, and regulations which governed many preparations. There was no such Act in force in Australia.

There was no control over raw materials. Professor Thorp quoted an example of an analysis which had been made of a particular product. The first sample was correct in the right proportions; in the second sample double the quantity of the active ingredient was present, and in the third, half the quantity.

Another thing that worried him was the extent to which the public should be allowed to spend money on worthless preparations. He did not know how far they could permit or prevent that. He had in mind such things as hormone creams. They might be absorbed through the skin and might or might not be harmful. The prices charged for some of these preparations appeared to him to amount to profiteering of the worst order. He had been shocked by the advertising of such products. The pseudo-scientific jargon used was a reflection on the standard of education of Australians and on the Australian newspapers. He felt there was need for something in the nature of the English Therapeutic Substances Act, with perhaps in addition some form of accreditation.

He agreed with Mr. Hall in regard to the value of adopting a seal of approval. Several countries had set very high standards. South Africa had introduced a system something like the Victorian.

An interjection: I suggest that we first clean up our own back yard.

Mr. R. G. Smith suggested that the position could be met by enforcement of existing regulations under State Health Acts, the Broadcasting Act, etc. Some of the provisions of the legislation were not being strictly policed. One of the chief features of the Victorian Patent Medicines Act was that it provided a cheap and ready means of enforcing the regulations and standards for foods and drugs and the poisons regulations in that State. He thought it was safe to say that reputable manufacturers went to extreme lengths to see that their products were made and marketed in accordance with the requirements of the law.

After some further discussion the Chairman announced that this was the concluding paper and discussion of the session. Before closing, he would like the thanks of the Section to be reported to the University for facilities provided, and particularly to the Secretary and members of the Section "O" Committee in Sydney. Mr. Read had carried out a difficult job most efficiently, and the success of the Section meeting was in large measure attributable to him. He would like to see reported also thanks to the Pharmaceutical Society of New South Wales, for generous hospitality extended to the members during their stay in Sydney.

Finally, and in conclusion, he wished to express his thanks to the contributors of the various papers which had been presented, and to the firms and institutions which had been associated with the Section.

THE PLACE OF THE HUMANITIES IN PHARMACY COURSES

By E. F. Lipsham,

(Lecturer in Pharmacy, University of Adelaide.)

Since the establishment in 1933 of The Diploma in Pharmacy of the University of Adelaide, the writer has made many inquiries regarding the manner in which students in pharmacy are educated and trained in other centres. Although this contribution to Section "O" is a progress report of these inquiries, The Humanities have been selected for particular attention, discussing first the position overseas, then the need for such tuition in Australia, and finally the value of subjects such as English, History, Social Psychology and Social Biology.

We are all aware of the fact that any course of instruction has a marked tendency to become overcrowded and to reach the stage where lesser matters have to give way to more important ones.

Pharmacy is no exception to this rule, and hence over the years the original system of training by one master under the full apprenticeship system has been modified, first, to include organised class training in some of the physical sciences; secondly, to embrace sections of biological science, and now, in Australia, it is proposed that we consider introducing some of the aspects of moral, social and political science.

The writer has therefore re-examined the data previously collected to find how far overseas courses have progressed in the introduction of these Humanities.

After World War II the Pharmaceutical Society of Great Britain began to make the changes which involved the abandonment as from 1948 of the apprenticeship system and the chemist and druggist qualification.

The present British system provides for full-time courses of instruction leading to the qualifications of Pharmaceutical Chemist and Bachelor of Pharmacy. A survey of the subjects required shows that none of the Humanities is officially included in these recent changes, although a pharmacist recently returned from England reports that one centre (Glasgow) does provide such courses.

Prior to 1920 the more progressive of the American States began to remodel their systems of training and to abolish apprenticeship with the establishment of courses of two full-time academic years.

A very few of these early American courses include one or two Humanities, but these subjects are listed as electives and do not appear to have since become a really significant part in the studies required.

This movement of full-time academic study has gradually developed through three to four years, and there is now much talk of courses of five and six years for the retail pharmacist.

One of the reasons given is the need to include humanitarian subjects on a compulsory basis, because out of the 50,906 pharmacists registered in the United States in 1951, no less than 87.2 per cent. were engaged in the retail sphere. In some States the movement has taken the alternative form of summer schools in the Humanities during the long vacation.

In 1951 the Government of South Africa set up a commission of inquiry into the problem of the education of chemists and druggists in that Dominion. The Commission's report recommended a course of full-time study spread over three years in the usual subjects, and includes a passing reference to the subject of **Contemporary Civilisation** when quoting the requirements of an American State. The fact that the title is set out between inverted commas seems to indicate how far the ideal of a broadening of subject matter has gone in that Dominion.

The requirements in Northern Ireland, Canada, New Zealand, India, Egypt, Hongkong and the Phillipines have also been considered, but a similar concentration upon scientic subjects and an absence of Humanities has been found to exist in these centres at the time of inquiry.

Although there is little evidence of the Humanities there appears to be a general increase in the requirements. The reason for the establishment of extended courses seems to have its root in the advances made in organic chemistry and the production of drugs of a complex nature used as specific medicines without being compounded.

This world-wide upheaval in traditional pharmaceutical duties also appears to have caused those responsible for the training of pharmacists in English-speaking countries, to decide to use the opportunity to build courses similar to those on the Continent. References are made in official reports to the degree status and the limitations of a licensing system both of which have been in force in European countries for many years.

One British spokesman claims the new system of that country will produce "a good all-round pharmacist fitted to undertake the basic tasks of pharmacy . . . pharmacists fit to carry out the main branches of pharmaceutical activity, and the normal duties imposed on them by current scientific and medical developments."—Maplethorpe; reprint from P.J. in "A.J.P.," Dec., 1950.

This claim appears to be based upon the provision of a purely scientific educational programme.

Mr. Maplethorpe's ideals may be quite appropriate in the United Kingdom; similar claims may be suitable for the older parts of the world, but neither these ideals nor programmes are completely valid in Australia which, by comparison, is so very new.

We need something different because our young country is only just beginning to be industrialised in order that we may develop into a self-supporting nation. In 160 years we have developed a culture pattern which differs from that of Britain and the other Dominions, and in future we will probably still further modify the internal social structure of our island Continent.

A glance at those world-wide and greater factors which control our community life shows that in comparison with U.S.A. the area of our six States is but little less than that of the 40 odd States which constitute the U.S.A., but that our population of about 8½ million is less than that of a single city like New York.

Coupled with this sparseness of population is the statement that whereas 22.6 per cent. of Americans are employed in manufacturing industry, the corresponding figure in Australia is 28½ per cent.— (Australian Pharmaceutical Notes and News of May/June, 1952.)

This degree of industrialisation means that our closely packed centres of population will rapidly increase the facilities available for general adult education, and seems also to demand a wide vision for our pharmaceutical educational programmes, so that the pharmacist may continue to take an adequate place in human affairs as they appear likely to develop in the next two decades.

Australian pharmacy can readily do this provided we are willing to embrace the wider viewpoint which is gathering momentum in educational fields at tertiary level. Part of this view is that degrees in science should cease to be given for the study of specialised subjects only, and that such qualifications should include the study of the Humanities in an effort to stop the production of what have been termed "uneducated specialists."

It is not inappropriate at this stage to attempt to define the Humanities beyond the simple statement that the subjects are those which deal with the story of man, his home, and way of life and so for the purpose of this contribution the writer wishes to use a

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much wider definition, namely the Humanities are "a group of disciplines under consideration for introduction into pharmacy courses with the objective of combating the tendency toward specialisation now existent in our various training institutions, and with special consideration to the needs of pharmacists who work in the retail sphere."

Under the title "The School of Humanities and Social Sciences," the New South Wales University of Technology lists the following subjects: English, History, Philosophy (scientific method), Psychology, Economics and Politics.

It is interesting to note that the calendar of this University sets out that the study of these subjects is required of all of those who are enrolled to "broaden the experience and interests of the student and thus assist him to take the place in human affairs for which he is otherwise qualified."

Theoretically, of course, the above-mentioned subjects should not be required of students enrolled in the science faculties of universities. Enrolment itself, and the mingling of the various faculties, should make any student fully realise that there are other people in the world besides himself, and that each is entitled to hold views of his own.

Unfortunately, this is not how it works out in practice. The larger the University the greater the tendency for students to group themselves into their special schools and into their own personal groups. The result is that they tend to finish their education without having acquired the ability to converse, act and speak in public in a balanced fashion upon subjects within their knowledge. In other words, they tend to become the so-called uneducated specialists previously mentioned.

If, in the light of our intimate knowledge of the practice of pharmacy, we pharmacists stop and look at this problem, can anyone of us deny that a similar broad approach to the training of students in pharmacy is an urgent necessity? It seems obvious that our Australian professional, social and economic structures demand the change from the old to the wider modern concept.

Let us not be discouraged by the restrictions imposed by some of our Australian Pharmacy Acts and their meagre definitions of the duties of pharmacists. These Acts were placed upon the Statute Book prior to the upheavals caused by two world wars.

Today is the day of the kindergarten and the area school, the day of education in domestic and social science, together with many other progressive movements.

Similarly, pharmacy of today is progressive: it now involves the fact that the Government is the biggest user of our professional services.

These services include both the old drugs and the new specific medicaments. Drugs which hitherto have been supplied to patients by physicians are now commonplace in pharmacies, and their supply does not involve the passing of money between us and members of the public.

This progress merits an overhaul of the training systems to include, first, the scientific knowledge of these specific drugs and, secondly, the inclusion of the Humanities so that the pharmacist may be worthy of the status inherent in the new type of service.

Let us now go back to the beginning of pharmaceutical training and consider the entrance examination for a few minutes, and at the same time, remember that we have an increasing number of entrants with scholarships and that some of these lack a suitable home background.

The present tendency is to demand more and more special subjects, mainly of a scientific character. Such demands force the prospective entrants to concentrate their secondary education into a narrow field and so deprive them of at least part of the broad school education which would otherwise be obtained.

This is a wrong beginning, particularly when the subsequent tertiary programme is specialised along similar lines, and the outcome is that our product lacks a reasonable educational balance.

Any balance which he may have as a finished student is very largely due to his retaining part of the benefits of the encouragement of individuality and freedom of expression of our present-day primary and secondary schools, and to the apprenticeship system which has forced him to meet a very large number of people in the pharmacy. Apprenticeship widens the mental horizon and gives balance because it trains in some of the Humanities although such experience is in the applied field and is acquired by hit and miss methods.

However, the increasing demand for more time for academic study means less time for practical experience, therefore there is a need to replace "picking up" Humanities with organised tuition in the social sciences.

Let us not forget that our forebears read their reference books in Latin and that this skill was then, and continued for many years to be, one of the hall marks of a cultured man.

However, the pharmacopoeias are now eliminating the last traces of Latin and so a return to the old days would be out of place.

Instead of thinking of returning to the older yardsticks of a broad classical education, is it not more appropriate to move with the times and to try to use modern methods to produce pharmacists able to take their place readily, easily, and effectively in the health services of the community? To do this the first step is to require a variety of subjects in the entrance examination and so provide a broad cultural basis upon which a non-specialised tertiary education can be satisfactorily built.

As we develop this non-specialised system should we not face up to the hard fact that the success of our educational and training system will be judged and, indeed, IS being judged by a much more highly educated populace than that which judged the system under which we ourselves were trained?

The cultural attainments of the man in the street are wider and vastly different to what they were, and our efforts in training pharmacists will be correspondingly more widely measured in terms of the whole effect on the mind and character of young pharmacists. We should therefore recognise that a scientific entrance requirement and a subsequent scientific tertiary education can have only a partial effect upon the mind and the character.

Similarly, we should look at the effect of the old and the suggested systems upon pharmacists themselves. It seems obvious that the future holds less and less chance for manufacturing and dispensing activities which have been the mainstays of the profession for many years.

Many smaller pharmacies will therefore have a greater degree of stereotype prescriptions to fill than at present. This factor is already responsible for the refusal of some younger men to go into the country: they wish to avoid stagnation. This is a particularly bad thing in a sparsely populated country like Australia.

If we continue to educate in a narrow band of subjects, then it is a surety that many of our trainees will consider we failed in our duty when they reach the mature years of around 40, and are considering the subject of secondary education for their own children. They won't let them enter pharmacy.

In other words, unless the Humanities are included the vast majority of retailers of (say) 1972, will be entirely out of sympathy with the educational system: their inherited faith in pharmacy will be completely undermined—particularly if we have to live through a period of depression. The Humanities offer us some chance of keeping alive the pharmaceutical ideal of the giving of a wide service, one suited to a community enjoying socialised medical services.

Outmoded ideas that pharmacy is a purely scientific calling must therefore go overboard.

Let us turn now to a further and more detailed consideration of those subjects within the humanitarian field which can be considered to be of the greatest advantage to pharmacists.

The subjects of English, Social History, Social Psychology and Social Biology each appear to have marked claims for inclusion.

English and History are each important because the study of such subjects must tend to broaden the experience of students.

Some secondary schools now include courses in English expression for those students who are to go into science, medicine and similar courses. The objective is to instil the ability to distinguish between facts and opinions and the need to avoid crooked thinking. Maybe this is the type of English which is suitable for further development and study by students in pharmacy.

Further, communities judge pharmacy more on the daily lives of pharmacists than any other single factor, and there will be no disagreement with the statement that every pharmacist should show that he respects his profession by his daily behaviour.

The maintenance of professional status is difficult for those groups who lack a specific tradition, but pharmacy enjoys a unique position of being able to provide a host of historical facts and historical examples. These can be added to a balanced presentation of social history which deals with the daily life of past peoples and the repercussion of their lives upon the political and economic history of their country.

Psychology, in the form of Social Psychology, cannot fail to be of great value. Under the title of Human Relations, it immediately produces favourable reactions in the minds of older pharmacists; they know by hard experience how much their happiness in life depends upon satisfactory relations with other human beings whom they meet day by day in large numbers.

During the first term of 1952 the Council of The Pharmaceutical Society of S.A. arranged for a short series of evening lectures on "The Social Sciences—Some Aspects of Vital Importance to Pharmacists."

The preliminary statement claimed that the talks were designed to show how organised study of some of the newer sciences can be useful professionally and personally.

These lectures were very interesting, and they proved to executives who attended that psychology can be included in the curriculum with outstanding advantages to students.

It seems that this subject can replace in part an intangible but vitally important value which is inherent in the apprenticeship system, namely the personal ethical responsibility of the pharmacist to those people to whom he supplies medicine.

The subject could therefore counter the fact that the shorter working week means less personal contact between master and apprentice and so less chance for this responsibility to be adequately stressed.

The South Australian course of evening lectures also demonstrated that a graduate from a study programme which includes social psychology, would be better able than one who lacks such an introductory course, to cope with those personal problems which are a feature of retail pharmacy.

A similar position has been created in the wider field of official pharmacy. Those senior office-bearers who attended the lectures now bring a wider understanding to those problems which come before them in carrying out their official duties.

Perhaps this new clarity can best be explained by setting out a number of thoughts which are now more evident than they have been in the past. If these thoughts can be transmitted to students as part of courses in social psychology or of ethics then the subject is an immediate necessity rather than a vague idea for the future.

A.—Good relations between the public and the retail pharmacist depend upon three factors:

1. that the pharmacist understands the public;
2. that the public understand the role of the pharmacist in the community; and
3. that the pharmacist meets the need of the public both in the professional and commercial fields.

Obviously there is need for the study of the basic principles which underlie good relations.

B.—A wider mental outlook gained by the study of the Humanities will help to overcome the inertia which is a feature of some of our organisations. There is a big need for a change in the outlook of merely paying a subscription to **belong** to the idea of paying a subscription to have the chance to **lead.**

Leadership can be introduced to students by one of the recognised methods of teaching used more particularly in social psychology, i.e., the seminar system which requires, amongst other things, that each student stand up in front of the class and expound his views on a particular subject.

If this nucleus of leadership training is made available, pharmacy can then build more active internal organisations which will be characterised by greater activity within the group and more cohesion with allied groups.

Opportunities for younger pharmacists to take leading positions can be evolved in official, social, sports and similar activities: such positions will satisfy their natural craving to lead, and will be sought by them once their minds have been stimulated by lectures in social psychology. Students should be made aware of the need to train themselves for their intra-professional duties, and that it is hopeless to leave such activities to chance, or, worse still, "to George."

C.—Most medical practitioners appreciate pharmacists when they stop to think about the matter, but they seldom do, and they take the pharmaceutical profession for granted. Pharmacists must act to correct this unfortunate attitude: a well-educated profession is capable of telling physicians what they do, how they do it, and why it must be done. Friction between the groups and between individuals in the respective groups is usually due to misunderstanding and to a lack of personal contact. A knowledge of psychology will be a considerable aid in answering these problems.

Social Biology.

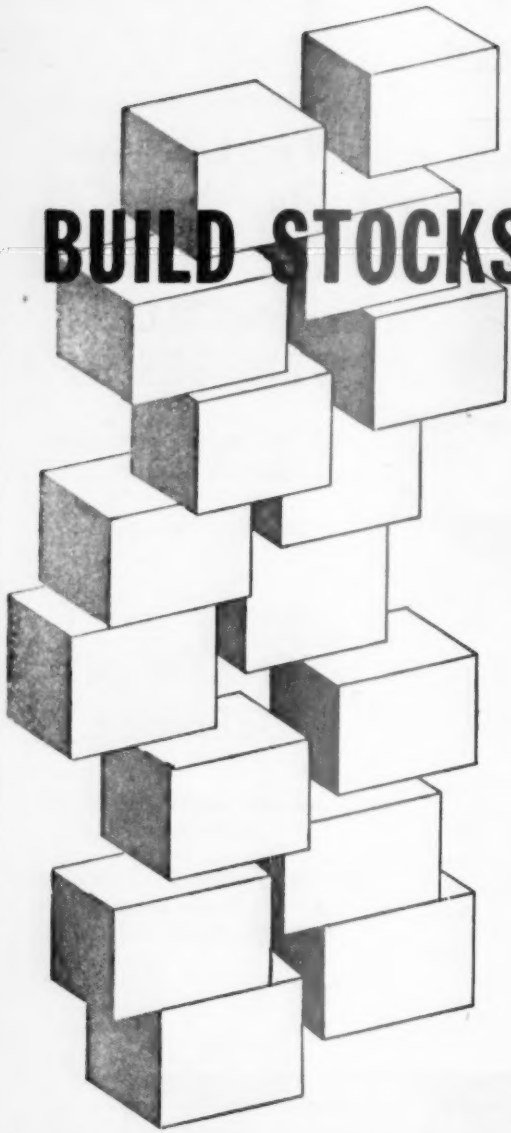
Within the University of Adelaide students enrolled in this course attend lectures and practical work during the first and second terms in either Biology I or Human Biology. During the third term they attend a special course of lectures covering the application of the science to the community. The following extracts from the syllabus indicate those topics which are of the greatest value to pharmacists.

The Role of Medicine in the Life of the Community.
Immunisation—Herd and Individual Immunity.
Diseases of Social Significance.
Personal Hygiene in Society.
Maladjustment of Individuals and Groups.
Repercussions on Society from a Biological Viewpoint.

Although the foregoing represents only a part of the subject matter, there is ample evidence of the potential value of such lectures to pharmacy students.

Overall the need is for background courses in the training of pharmacists for the same reasons that have lead to the recent public announcement regarding the training of other specialist students within the University of Adelaide.

These reasons were given in the daily press by the Professor of English (Professor A. N. Jeffaries), and one of particular importance to pharmacy read: "It is realised that a student turned out into the world with



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merely a high standard of knowledge in one particular discipline is not a person who has gained from his years of study all that he should have gained."

In conclusion, let us not lose sight of the fact that the problem of improving the ideas and ideals of the retail pharmacist does not conclude with the introduction of the Humanities in the pharmacy courses.

Continued education in post-graduate life is essential so that practising pharmacists and teachers who are pharmacists do not stand in their own light, or become set in their ways and build up barriers between themselves and others.

It is therefore hoped that the project of including Humanities in pharmacy courses will spread and gain acceptance through the age-old absorptive powers of our profession, not in the guise of a poor relation, but stage by stage, until they are a vital pulsating one-third of the total curriculum.

DISCUSSION ON MR. LIPSHAM'S PAPER.

The Chairman asked Mr. Sissons to open the discussion on this paper.

Mr. Sissons said that Mr. Lipsham's paper was most timely, for this question was being discussed today in educational circles throughout the Western world. It was whether education should produce merely technically competent persons or open the door to a successful method of living.

This question of the place of the Humanities in education was not a new one. It had been discussed by Newman in 1850 in his Lectures on University Education, then in 1930 by Gasset, in his arresting "Mission of the Universities," and more recently (1948) in "The Crisis in the University," by Moberley. An American article based on this last book was entitled "The Chaotic University." Such discussion has become the more necessary because of the great increase in specialisation. Modern progress makes specialisation inevitable; what has to be guarded against is over-specialisation, or, in the phrase of one writer, the atomisation of knowledge.

Should we teach "tricks of trade" when we might teach principles? Should we aim at producing technicians when we might turn out the "rounded man"? Should education seek to enable a man to earn a living or to realise a life worth living?

We might put it another way—should teachers be leaders of thought and inspirers of youth or be merely lackeys of the established order?

Mr. Sissons went on to say there were difficulties in achieving what Mr. Lipsham advocated. There was the question of time. We had the student for only three or four years; the difficulty of the time-table; the rival claims of different subjects, and, as always, the question of finance. The speaker considered it of the utmost importance that the student should have a wide choice outside his own professional subject.

Then, too, it is not so much a question of subjects as the approach to the subject and the level at which it is treated. Arts subjects can become uncultured, specialised and narrow, while science subjects can be so presented as to call forth the highest human attitudes and attributes.

The question might be asked, do we make the most of the subjects already in our syllabuses?

Gowland Hopkins closed his address to the British Association in 1933 with the phrase, "I believe that for those who cultivate it in a right and humble spirit, science is one of the humanities, that and no less."

Ehrlich was opposed to specialisation in education; he wanted teaching methods simplified and advocated the great importance of the art of expression whose keynotes he claimed were simplicity and clarity. Ehrlich said that the greatest contribution the teacher could make was to encourage the questing mind.

For some years Wood Jones taught anatomy first in Adelaide and then in Melbourne; for his students there was no call to add an Art's subject to give clarity of expression and conciseness in presentation, nor did they need further incitement to enthusiasm for learning.

One would imagine that physiology students who absorb Sherington's "Man on His Nature," and Walter Cannon's "The Wisdom of the Body," hardly need further selections from modern literature in another faculty.

Or, take Osler as an example of a born humanist. He taught his students how to observe, how to think, and how to direct enthusiasm. On one occasion Osler said: "The practitioner needs culture as well as learning. The wider and freer a man's general education the better practitioner is he likely to be—breadth, reassurance and sympathy may mean more than pills and potions, humanism is the bichloride that may prevent infection and keep a man sweet and whole amid debasing surroundings."

On this matter there could be no better guide than "Popsy" Welch, in many ways the founder of modern American medical education. He claimed that "some study of the humanities should add greatly to the intellectual pleasure, breadth of vision, satisfaction and even efficiency of the man of science." Welch himself adopted the historic approach to his subject so as to indicate from readily accessible data some of the more important influences that have determined the development of medical science.

Mr. Sissons said he was trying to show that much that Mr. Lipsham desired could be achieved without going outside the subjects already in our syllabus.

We criticise the institution, the syllabus, and the teacher, but do we not often neglect the student in these discussions? He is adult, and at the tertiary level. Should he not have wide choice with regard to the humanities? Might he not reach the desired goal through music, through contemporary art, or modern drama if these be his choice? These are readily available through the activities of modern education. Available if the student has the urge to take them. The student must accept the responsibility of making the choice. Does he desire the complete education? Will he make full use of what is available?

Now if we are to consider the addition of further subjects we might well weigh the claims of the history of the rise and progress of scientific ideas or the rise of the social sciences with special reference to their bearing on pharmacy and medicine.

C. F. M. Joad suggests that whatever subject we choose in an attempt to rectify present deficiencies, it should give—

(a) The power of concentrated thought.
(b) A sense of proportion and of the relative value of things.
(c) And finally lead to a serenity of outlook, that final evidence of an educated mind.

Mr. Sissons said it would be apparent that he would go a long way with Mr. Lipsham, but they would have to avoid overloading the syllabus. He would suggest that "aspects of social, moral and political science" is a pretty big order to superimpose on pharmaceutical education. But Mr. Lipsham has indicated wherein we are deficient, he has directed attention to possible avenues of advance; his propositions should be explored thoroughly in our search for the balanced but dynamic programme of studies.

One concluding point; if undue specialisation is to be avoided at the tertiary level, still more is it to be excluded at the secondary stage, and so we must reduce to the minimum any prerequisite subjects for entrance to pharmacy. Let the secondary school give a broad general education.

Mr. Lipsham said he had deliberately put forward his suggestions on the broadest possible lines. The suggestions were essentially of a wide character and not in any way to be considered as specific. He mentioned specific subjects because it was not practical to proceed with the preparation of the paper without doing so.

A member asked who would decide in New South Wales what were to be the subjects of the course?

Mr. Read: Professor Thorp and Mr. Wright, of the Department of Pharmacy at the University, in collaboration with the Pharmacy Board and the Pharmaceutical Society.

Mr. Callister suggested that any suggestions in relation to the New South Wales syllabus should be sent in to the Pharmaceutical Society.

Mr. Tottenham said that in New South Wales they had a general matriculation standard of entrance to the University. It appeared to be the opinion among University authorities that this had resulted in a lowering of the standards for all the faculties.

Mr. Lipsham: Personally, I would prefer to see a general standard than a special one.

A member asked whether there would be an examination in the proposed subjects or whether attendance at lectures would be satisfactory?

A reply was given to the effect that as visualised at present there would be a selection of optional subjects and that an examination would be required.

Mr. Lipsham said that the proposals were in the formative stages. Up to the present it had not been decided whether it was desirable to have compulsory examinations. He personally had not satisfied himself one way or the other. The session closed with an expression of appreciation to Mr. Lipsham by the Chairman.

PRESERVATION OF OPHTHALMIC SOLUTIONS—A CRITICAL EVALUATION

(Miss) M. L. Frith,

Pharmacy Department, University of Sydney.

The problem of producing and maintaining sterile ophthalmic solutions has always been one of considerable difficulty to both ophthalmologist and pharmacist. The only official guide, in this matter, is the B.P.C., which states:—

"Eye-drops should be freshly prepared with aseptic precautions and dispensed in previously sterilised containers. A suitable fungistatic such as Liquor Pro Guttis, should be used in preparations liable to support the growth of moulds. Care should be taken to avoid contamination during use."

Gifford[1] advised the use of boric acid buffers in ophthalmic solutions; stating that their use prevented growth of yeasts and fungi. Chlorbutol (0.5 per cent.) is also sometimes used[2] although it may be somewhat irritant to the eye. Also chlorbutol is not very stable to heat, solutions becoming more acid on autoclaving.[3] Hasler[4] advocated the use of Nipagin and Nipasol, esters of benzoic acid to prevent growth of moulds and bacteria — these two esters, methyl p-hydroxybenzoate and propyl p-hydroxybenzoate are those used in Liq. Pro Guttis B.P.C. The use of p-hydroxybenzoate prevents growth of fungi, but this does not mean that it will prevent the growth of bacteria liable to be pathogenic to the eye. Contamination with such organisms may readily occur with subsequent rapid growth in the solution.

Haffley and Jensen[5] proposed placing ophthalmic solutions in rubber-capped vials, autoclaving them and removing the necessary amounts with a sterile hypodermic syringe. This method is obviously not feasible for a large institution in which many patients must be treated daily. Autoclaving, while achieving initial sterility, does not maintain it, and in addition, is only suitable for those drugs which are stable at 115 deg. C. The potency of many alkaloids is lost, or partially lost, at this temperature, as is also Penicillin.

To prevent growth of organisms introduced during use of the eye drops a substance should be present which is (a) bactericidal to pathogenic organisms; (b) compatible with most ophthalmic drugs and (c) is non-irritating to the eye.

It has been shown[6] that certain quaternary ammonium salts may be rated as very potent bactericidal agents. In vitro their action is greater than that of the common antiseptics, such as Iodine, Phenol and Mercurial compounds, and they exhibit bactericidal properties in quite high dilutions against a wide variety of micro-organisms, gram-positive and gram-negative, and fungi. The reports of Shelton et al[7] (1939, 1940) show that maximum germicidal activity appears with cetyl trimethyl ammonium bromide, which is now official as Cetrimide.

McPherson and Wood[8] produced "self-sterilising ophthalmic solutions" using benzalkonium chloride 1 in 5000, but did not state why such a high concentration was used. It was thought that if a more dilute solution of Cetrimide (the official quaternary ammonium salt) would produce the required preservative effect, such a solution would be much more desirable. At lower concentrations, the number of incompatibilities is decreased as well as any irritant effect the cetrimide may exert on the eye. Also it was decided to compare the preservative effect of Chlorbutol, Liq. Pro Guttis and Cetrimide.

Experimental.

The first experiment was to determine semi-quantitatively, the effect of some dilutions of CTAB on Staph aureus, as compared with Liq. Pro Guttis, using Distilled Water and Normal Saline control. As it was found that there was no significant difference between saline and distilled water, the latter only was used in subsequent experiments. A pure 24 hour broth culture of Staph. aureus was used, incubation being at 37 deg. C.

0.5 ml. of broth culture was diluted with 9.5 ml. of sterile Distilled Water and one drop added to the sterile test solutions, two bottles of each solution being used.

(a) 2 x 10 ml. Liq. Pro Guttis.
(b) 2 x 10 ml. C.T.A.B. 1 in 50,000.
(c) Distilled Water.

The solutions were allowed to stand in a dark cupboard for 24 hours before being diluted 1 in 20 with sterile Distilled Water, prior to plating out. This dilution lowered the strength of the preservative below bacteriostatic strength. The flood-plate method of Anderson and Stuart[9] was used, nutrient agar pH 6.8 being the medium. All pipettes and plates were wrapped and sterilised by dry heat at 150 deg. for one hour.

0.7 ml. of each solution was plated out and incubated at 37 deg. C. Results, after three days' incubation, were as follows:—

Table 1.

Plates	(a) Liq. Pro Guttis	(b) Cetrimide	(c) Distilled Water
1	173 colonies	No growth	460 colonies
2	230 colonies	No growth	520 colonies
3	550 colonies	No growth	390 colonies
4	567 colonies	No growth	286 colonies
Average No. of colonies	380 colonies	No colonies	414 colonies

This experiment indicates that Liq. Pro Guttis supports the growth of Staph. aureus to about the same extent as Distilled Water, while C.T.A.B. 1 in 50,000 is lethal to Staph. aureus within 24 hours.

A similar, though qualitative, test was done using three other organisms, 10 ml. each of the following solutions were used, subcultures being made into nutrient broth (pH 7.5) after 24 hours contact. The sur-

vival of organisms after 24 hours contact is shown in the following table:—

Table 2.

	P. pyocyaneus	Proteus Vulgaris	B. coli	Staph. aureus
Distilled H_2O	+	—	+	+
Liq. Pro Guttis	+	—	+	+
Aq. Chlorbutol 0.5%	—	—	+	—
C.T.A.B. 1 in 50,000	—	—	—	—

Results were observed after 48 hours' incubation at 37 deg. C. Proteus apparently did not survive in any solution for 24 hours, while C.T.A.B. 1 in 50,000 was lethal to the other organisms in that time.

All solutions used were sterilised before addition of the test organisms by autoclaving at 10 lb. pressure for 30 minutes. In the next experiment it was decided to determine the effect of the preservative on the same organisms, after much shorter contact intervals. This was done in order to ascertain the relative killing powers of the preservatives in respect to time. Subcultures were made into nutrient broth after contact intervals of 15, 30 and 60 minutes respectively.

From a preliminary experiment with P. pyocyaneus it was decided to increase the C.T.A.B. solution to 1 in 20,000 as 1 in 50,000 was too dilute to produce any rapid lethal effect with this organism. To ensure that the dilution of C.T.A.B. 1 in 20,000 (0.1 ml. in 10 ml. nutrient broth) was below bacteriostatic strength, a control was done by subculturing from an active 24-hour culture of P. pyocyaneus into 10 ml. nutrient broth containing 0.1 ml. C.T.A.B. 1 in 20,000.

A similar control was done with the Aq. Chlorbutol 0.5 per cent. Vigorous growth occurred in each case. Results were observed after three days' incubation at 37 deg. C.

Table 3.

	P. pyocyaneus	Proteus Vulgaris	B. coli.	Staph. aureus
	Minutes 15 30 60	Minutes 15 30 60	Minutes 15 30 60	Minutes 15 30 60
Distilled Water	+ + +	+ + —	+ + +	+ + +
Liq. Pro Guttis	+ + +	+ + —	+ + +	+ + +
Aq. Chlorbutol	+ + —	+ + —	+ + +	+ + +
C.T.A.B. 1 in 20,000	— — —	— — —	— — —	— — —

From these experiments it can be concluded that C.T.A.B. 1 in 20,000 was rapidly fatal to several common pathogenic organisms, including both gram-positive and gram-negative types.

Sensitivity Tests.

Two ophthalmic solutions were prepared, one of sterile distilled water and one of sterile distilled water containing C.T.A.B. 1 in 20,000.

Sixty-three adult persons with normal eyes were tested, one drop of each solution being placed in each eye. Of the 63 people, 19 said they experienced slight irritation with the Distilled Water, and 18 experienced slight irritation with C.T.A.B. 1 in 20,000. Included in this result, are several who apparently experienced irritation with both solutions.

Cetrimide 1 in 20,000 is compatible with most ophthalmic drugs. No precipitate, turbidity, or opalescence occurred with solutions of Acid Boric, Borax, Copper Sulphate, Pilocarpine Nitrate, Sodium Chloride 0.9 per cent., Penicillin, Cocaine 2 per cent., Zinc Sulphate, Atropine Sulphate 1 per cent., Fluorescein Sodium 2 per cent., Hyoscine Hydrobromide 0.2 per cent., Homatropine Hydrobromide, Sodium Propionate, Sulphacetamide Sodium, phosphate buffers or borate buffers. C.T.A.B. 1 in 20,000 was compatible with Physostigmine Salicylate 0.5 per cent., although precipitation occurred using 1 per cent. C.T.A.B. Precipitation also occurred with solutions of silver nitrate and mercuric chloride. Clinically, the surface active properties of C.T.A.B. are desirable, and solutions containing it show marked spreading properties, probably resulting in more rapid absorption of drugs. Also C.T.A.B. is most active as a bactericide in slightly alkaline pH, i.e., the pH of tears, to which many ophthalmic solutions are adjusted.

Conclusion.

C.T.A.B. 1 in 20,000 is suitable as a preservative for ophthalmic solutions, being rapidly fatal to common pathogenic organisms which may contaminate such solutions. In this concentration it is non-irritating to the eye and compatible with most ophthalmic drugs.

Acknowledgments.

The author wishes to acknowledge the help of Mr. S. E. Wright in suggesting this topic and for helpful advice, and Miss D. K. Large for assistance with experimental technique.

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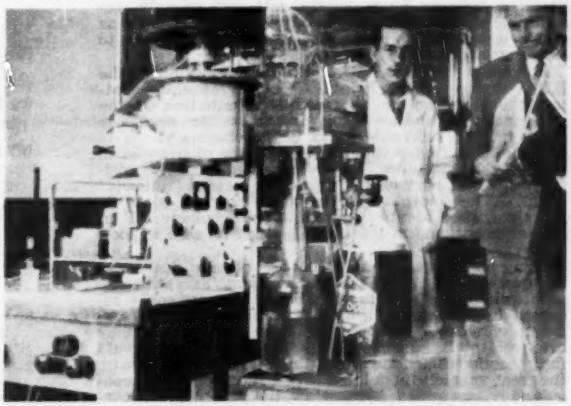

Demonstration in Pharmacology Laboratories. Mr. P. J. Ashelford (left) and Mr. N. C. Manning inspecting a tissue bath and kymograph.

GUIDE STRENGTHS OF DRUGS FOR EXTERNAL USE

(A Topic for Discussion at the Applied Pharmaceutics Forum)

By N. C. Manning and W. G. Pickford.

When a prescriber orders drugs for external use in an excessive strength, it is often difficult for the pharmacist to determine whether the prescriber realises the consequences of using such a drug strength, or whether he has acted inadvertently. The variety of strengths used is well borne out in the latest edition of Krantz and Carr's "Pharmacologic Principles of Medical Practice." The drug adrenalin is recommended for use as a nasal decongestive in strengths from 1-10,000 to 1-1,000. This range of strengths becomes even greater when it is known that the B.P.C. suggests the use of this drug as a nasal spray in a strength of 1-10. In short this drug may be used in the nose in strengths varying from 1-10,000 to 1-10 in an aqueous base—an extremely wide range of drug strength. Adrenalin is not a caustic drug. In sharp contrast to the wide range of strengths in which adrenalin may be **safely** used are drugs of a caustic type such as Phenol, Cresol, Silver Nitrate, Zinc Sulphate, etc. The range of safe strengths in such instances is necessarily much narrower. A 1 in 80 aqueous solution of Phenol may be safely used on the normal unbroken skin, but solutions in excess of this strength can be caustic. Meagre information and the scattered nature of such information available to the pharmacist have prompted us to bring this topic forward for discussion.

By far the greater proportion of drugs for external use are used for a specific purpose or a **few** specific purposes—e.g., Hydrarg. Ammon. in ointments for skin infections, and not in, say, eye drops. Capsicum is used on the unbroken skin, but not on denuded areas. **Occasionally** a drug will either capture the imagination of prescribers by being suitable for very diverse use, e.g., aminacrine hydrochloride is used in lotions, ear drops, eye drops, nose drops, etc. This diversity has often a geographical character.

The pharmacist's position is a peculiar one. The eccentric prescriber will often order a drug for a purpose (say it is Hydrarg. Ammon. in oily eye drops) for which there is little or no precedent in the literature. Many pharmacies have, at least, one such crisis a week.

To the pharmacist, this problem is of particular importance because he is jointly, although directly, responsible for any suffering or injury a patient sustains due to a prescriber's inadvertence, or his own failure to check strength as he does dosage.

Reference to the B.P. is of little value, although the B.P.C. makes a very helpful, if often inadequate, attempt at putting the appropriate information at the pharmacist's disposal. This indicates the need for many modern reference books in the pharmacy.

Of necessity much time is spent by the pharmacist in culling the literature for information which is difficult to find, particularly regarding newer "unlisted" drugs. (The respective British and American books do not always use identical names, e.g., Dicophane B.P. is Chlorophenothane in the U.S.P.). Modern card indexes are very helpful.

Many will argue against the use of empirical rules for dosage, but regardless of the many exceptions to such guides, the usefulness of dose rules are quite accepted by the general pharmacist and practising physician of today. Although, at times, misleading, they are well nigh indispensable. The pharmacist would find practice difficult without them. In Australia, with its great sparsely populated areas, the problem is considerably magnified because of the difficulty of consulting books, libraries, prescriber and colleagues.

The enormous number of drugs encountered in pharmaceutical practice increases the need for some type of general guide to drug strength. It is admitted that the limitations of such a guide would need to be fully appreciated, by the supplementary use of reference books.

The majority of ills are common ailments, and many, of necessity, receive only symptomatic and/or topical treatment. It follows that a large number of prescriptions are for external use—we include nasal, aural, etc., as external.

The common cold is much more prevalent than, say, systemic toxaemia, and how do we treat it? We use nasal drops, lozenges, gargles, throat paints, chest rubs, etc. (and then, of course, there is the well-known cough mixture which most agree is only a placebo). A few other common ailments which immediately come to mind as requiring topical treatment are cuts and scratches, burns, herpes rash, dermatitis, varicose ulcers, impetigo, ringworm, tinea and the eruptive fevers. It follows that a large number of prescriptions arising in general practice are for external application, as opposed to oral or parenteral administration.

Difficulties in Preparing Guide Strengths.

There are many factors which operate in influencing the irritant effects of drugs:—

(1) **Variation**

(a) Individual or Species Variation—this is well known to pharmacologists and geneticists, e.g., in a series of skin irritability tests on 51 human subjects (using sodium hypochlorite solution 0.55 per cent) the time to cause a hyperaemia on the arm varied from 22 minutes to 105 minutes, when the dressings were changed at ten-minute intervals.

(b) Environmental Variation. For example, occupational cornification of the skin.

(c) Idiosyncrasy.

(2) **The Site of the Application.**

Histological considerations, plus the experience of practice, would seem to place the tissues in a series, which follows this pattern as regards drug concentration.

Normal Skin > Mouth > Wounds > Bladder > Eye.

Another point is the effect of organic liquids such as D.M.T., Methyl Salicylate, Turpentine, Alcohol, Eucalyptus, Chloroform. These liquids are irritant where the corneous layer is absent. This is, no doubt, due to their powers as lipoid solvents.

(3) **Type of Vehicle.**

(a) **Vehicle.** Iodine is less caustic in oil than in alcohol.
Phenol is more caustic in water than it is in oil or glycerin.

(b) **Isotonicity**
Lysis is diminished by adjusting solutions to isotonicity.

(c) **Buffering**
Similar considerations to (b) above. Eye lotions are blander when the pH is adjusted.

(d) **Surface Activity**
Greater absorption is obtained when, say, Atropine is used with cationic detergents of the Cetrimide type.

(4) **Method of Application.**

(a) Contact may be more intimate when bandaged (e.g., Ointment of Ammoniated Mercury). Impervious coverings, such as adhesive plaster, rubber finger stalls, oiled silk and other heavy dressings, retard surface evaporation of water from the skin, thus causing softening and increased tenderness.

(b) Evaporation of solvent from lotions and subsequent concentration of medicament. This is encountered with alcoholic solution of iodine, aqueous solution of phenols, etc.

(c) Duration and frequency of application. Hypochlorites lose chlorine rapidly in contact with skin. Irritability is increased in this case by frequent dressing change.

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(5) **Chemical Effects.**

Chemical substances may interact to give increased or decreased causticity.

Increase { $NH_2HgCl + I_2 \Rightarrow HgI_2$; $NH_2HgCl + KI \Rightarrow HgI_2$

Decrease { Phenol + NaOH ⇒ Sod. Phenate. ; Phenol + Glycerin ⇒ Glycerin of Phenol. ; Phenol + Camphor ⇒ Non-caustic mixture ; Hypochlorite + Serum ⇒ Inactivation. ; Iodine + Lipoid ⇒ Saturation of Lipoid Molecule

(6) **Physical Effects.**

(a) Capsicum and other rubefacients more irritant following hot bathing.

(b) Distribution of drug into a phase of an emulsion (i.e., partition effect) where more intimate contact or absorption may be effected with the skin. This calls for an altered conception of drug strength with the popular emulsion cream bases.

(7) **Physiological Effects.**

The general differences between drug action on normal and diseased surfaces. (The epithelia of the body atrophy during Vitamin A deficiency.)

Drugs on denuded areas.

Drugs on an area affected by dermatitis, œdematous areas.

The factors involved in determining "safe" drug strength are, therefore, legion.

In spite of the obvious difficulties caused by the operation of all these variants—is it possible to prepare pharmaceutical guide strength of drugs for external application?

From an examination of the books of reference, we feel this is possible, but again we would like to emphasise the "guide" nature of such a project.

Just as the B.P. intends its dose tables as purely for the general guidance of prescribers—this strength table is intended purely for the general guidance of dispensers.

The table is for drug strength of external preparations **in the same vehicle.**

Skin	Wound	Throat & Mouth	Vagina	Ear	Nose	Eye	Bladder
1	½	½	½	½	½	¼	½

As mentioned, this is not meant as a final working rule, but is put forward to stimulate comment and criticism by Pathologists, Physiologists and Pharmacists, so that development of such an idea may ensue.

SOME DIFFICULTIES ASSOCIATED WITH THE DISPENSING OF SURFACE ACTIVE AGENTS

G. Eckert and C. Griffiths

(Department of Pharmacy, University of Sydney)

While carrying out a series of investigations on "Molecular Interactions of Oil/Water Interfaces," Schulman and Cockbain (Trans. Farad. Soc. **36**, 651, 1940) found that while Sodium Cetyl Sulphate would not form a stable Nujol/Water Emulsion, a mixture of Cetyl Alcohol (or cholesterol) and Sodium Cetyl Sulphate produced an excellent emulsion.

From this (and other evidence involving a study of various isomeric alcohols) it was inferred that the molecules of Sodium Cetyl Sulphate and Cetyl Alcohol arrange themselves in a definite formation ("Molecular Complex") at the oil/water interface.

In this manner more Sodium Cetyl Sulphate was gathered at the interface when the oil soluble surface active Cetyl Alcohol was present. This greater gathering at the interface resulted (in accordance with the Gibbs Adsorption Equation) in a lowering of interfacial tension (thus increasing the ease of emulsion formation) and the interlocking molecules formed a charged stabilising barrier against the coalescence of the globules.

The following diagram illustrates the formation of the complex film.

The oil/water interface will be electrically charged as the polar ends of the molecules project into the water. This will result in further stabilisation, since ions with similar charges repel one another.

In order to obtain more information about the stability of these molecular complex films in pharmaceutical practice, various substances were incorporated into a series of emulsions of the complex film type.

The emulsion was prepared by mixing the warm phases at the same temperature and stirring until cold. The medicament was then incorporated into the cold base. In this way the stable interfacial film will have formed before material is added. For the purpose of investigation a series of emulsions of the following general type was prepared: —

(See over page.)

TABLE I

Emulsion prepared first, allowed to cool thoroughly and medicament added.
Key: ++ = Emulsion breaks immediately.
+ = Emulsion breaks on standing for some time.
— = Emulsion stable.

Medicament	1% Sodium Lauryl Sulphate = 10% Emulsifying Wax.	0.5% Sodium Lauryl Sulphate = 5% Emulsifying Wax.	0.2% Sodium Lauryl Sulphate = 2% Emulsifying Wax.	1% Cetrimide B.P.C.	0.5% Cetrimide B.P.C.	0.2% Cetrimide B.P.C.
Ichthamol 10%	—	—	+	+	+	+
Phenol 5%	++	++	++	—	++	++
Phenol 2%	++	++	+	—	+	+
Sodium Sulphacetmide 10%	—	+	+	+	+	+
Ephedrine Hydrochlor 1%	—	—	+	—	—	—
Ephedrine Hydrochlor 5%	+	+	+	—	+	+
Zinc Sulph. 5%	—	—	+	—	—	—
Salicylic Acid 15%	—	—	—	—	—	—
1% Aluminium Sulphate	—	+	+	—	—	—
10% Aluminium Sulphate	—	+	+	—	—	—
Liquor Iodi Fort 5%	—	+	+	+	+	+
Liquor Ferri Perchlor 10%	+	+	+	+	+	+
Zinc Peroxide 10%	—	—	—	—	—	+
Resorcinol 5%	—	—	—	—	—	—
Liq. Plumbi. Subacet Fort. 10%	—	+	+	—	+	+
Potassium Permanganate 1%	—	—	—	++	++	++
Sodium Chloride 10%	—	+	+	+	+	+

(with paper by G. Eckert and C. Griffiths)

Medicament 0—20%	
Sodium Lauryl Sulphate) or Cetrimide	1 or 0.5 or 0.2
Cetyl Alcohol	9 or 4.5 or 1.8
White Soft Paraffin	15
Liquid Paraffin	6
Water to	100

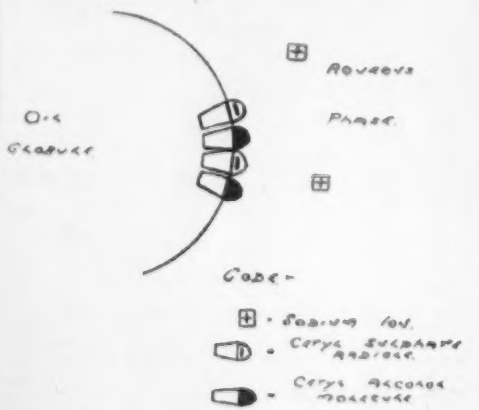
The ratio of Cetyl Alcohol to primary emulsifier was maintained in the proportion of 9 : 1 as in the B.P. Emulsifying Wax. Sodium Lauryl Sulphate was chosen as an anionic surface active compound and cetrimide as an example of a cationic type.

In cases where incompatibility was observed the non-ionic emulsifying agent polawax was substituted using a similar technique in preparation. Polawax is a preparation of stearyl alcohol and ethylene oxide reaction products.

TABLE II

Medicament	Polawax 10%	Polawax 10%	Polawax 10%
Aluminium Sulphate 1%	—	—	—
Aluminium Sulphate 10%	—	—	—
Liquor Iodi. Fort. 5%	—	—	++
Liquor Ferri. Perchlor 10%	—	—	—
Liq. Plumbi Subacet. Fort. 10%	—	—	—
Potassium Permanganate 1%	—	—	—
Ichthammol 10%	+	+	++
Phenol 5%	++	++	++
Phenol 2%	+	++	++
Sodium Sulphacetamide 10%	—	—	—
Ephedrine Hydrochloride 1%	—	—	—
Ephedrine Hydrochloride 5%	—	—	—
Zinc Sulphate	—	—	—

N.B.—It may be noted that some medicaments, e.g., Phenol, Salicylic Acid, were used in concentrations higher than normally. This was done as we were aiming at determining the point of introduction of incompatibility rather than keeping within the therapeutically safe range.



Discussion:

Some of the substances showing incompatibility in Table I have been shown to react chemically with the primary emulsifying agent. Examples of this are lead subacetate with Cetrimide and ephedrine hydrochloride and lead subacetate with sodium lauryl sulphate. Cetrimide is more sensitive to oxidising agents (Potassium Permanganate and Zinc Peroxide) than is sodium lauryl sulphate.

In these cases of chemical incompatibility the substitution of an equivalent amount of a suitable non-ionic emulsifying agent such as Polawax usually results in the preparation of a stable cream.

The complex film, however, may be broken by substances which do not react chemically with the emulsifying agents. Electrolytes such as sodium chloride and sodium sulphacetamide break emulsions especially where the concentration of emulsifying agent is low. Here the charges on the oil globules are neutralised by the ions of the electrolyte with resultant loss of stability. As may be expected, the trivalent positive ion of aluminium cracks sodium lauryl sulphate emulsions (in which the globules will be negatively charged because of the gathering of anions at the oil/water interface), but does not affect the CTAB emulsion in which the globules are positively charged.

In these cases, again, the substitution of a non-ionic emulsifying agent (in which the oil globules of the emulsion do not carry a definite charge) allows a stable cream to be prepared.

Finally, the complex film may be broken by substances which are themselves somewhat surface active. Examples of such substances are Phenol and Ichthammol.

It is not, in general, possible to correct these incompatibilities by the use of Polawax.

Ichthammol also tends to react as an electrolyte. This is illustrated by the fact that it tends to crack Cetrimide emulsions more readily than those of sodium lauryl sulphate. This cracking is probably due to the negatively charged sulphonate radicles in the ichthammol which neutralises the positive charges on the interface of the Cetrimide emulsion.

A noteworthy comparison in the table is that between the actions of Phenol and Resorcinol. Resorcinol, due to its very similar structure to Phenol, may be expected to crack the emulsions, as does the latter.

It will be noted that whereas phenol breaks the emulsions, resorcinol does not, despite its chemical similarity. This is due to the high water solubility conveyed upon the molecule of phenol by the introduction of a second hydroxyl group. Resorcinol thus tends to be present entirely within the aqueous phase and not at the interface.

Stability and Hydrogen Ion Concentration.

Emulsions of the "molecular complex film" type are stable over a wide range of pH, and as creams of low pH have recently been required for dermatological purposes these emulsions seem suitable bases for acidic preparations:

I.	Emulsifying Wax	10
	White Soft Paraffin	15
	Liquid Paraffin	6
	Citric Acid	10
	Water to	100
	and	
II.	Cetrimide	1
	Cetyl Alcohol	9
	White Soft Paraffin	15
	Liquid Paraffin	6
	Citric Acid	10
	Water to	100

Both these creams were prepared by the orthodox method of heating the oily ingredients together, dissolving the water soluble ingredients in the water, heating the aqueous solution to the same temperature as the oil, mixing the two phases and stirring until cold. Both these creams were stable and the pH was about 1.5 in each case.

It should be noted that the antibacterial activity of the cetrimide in acid solution such as this is negligible, but the emulsifying power appears to be unharmed.

Conclusions.

1. More trouble is experienced during the dispensing of emulsions of the molecular complex film type if the medicament is added to one of the warm phases than if the medicament is incorporated into the cold emulsion.

2. Creams of low pH may be prepared using suitable "complex film" emulsion.

3. The molecular complex film may be broken by:
   (i) Substances which react chemically with the surface active agent.
   (ii) Substances which interfere physically with the interfacial film.
   (a) Strong electrolytes.
   (b) Substances which are themselves surface active.

In all the incompatibilities (except the case of surface active medicaments) a stable preparation may in general be dispensed by substituting a suitable Non-ionic Emulsifying Agent, e.g., Polawax, for the ionic emulsifying agent.

Acknowledgement.

The authors wish to thank Mr. S. E. Wright for suggesting this work and for helpful criticism.

A NOTE ON THE PREPARATION OF OZONIC ETHER

By R. A. Anderson.

The British Pharmaceutical Codex describes ozonic ether as "a freshly prepared solution of hydrogen peroxide in ether, made by shaking together equal volumes of solvent ether and solution of hydrogen peroxide and separating the ethereal layer." The 1934 Codex was more vague: the preparation was made "by shaking a strong solution of the (hydrogen) peroxide with ether and separating the ethereal layer." It was directed that ozonic ether should yield about five volumes of oxygen **with potassium permanganate and dilute sulphuric acid.** This is about half the strength indicated by Martindale (Extra Pharmacopœia, Vol. I, 22nd Edn., The Pharmaceutical Press, 1941), which said: "It yields 4 to 5 volumes of oxygen." Twice these volumes would be evolved in the presence of potassium permanaganate and dilute sulphuric acid.

Ozonic ether is used in hospitals and clinics as a reagent to detect blood in urine. Three or four drops of a tincture of guaiacum (20 per cent. in 90 per cent. alcohol) may be added to 5 to 10 ml. of urine and ozonic ether layered on the mixture. Blood (or iodine) is indicated by the development of a blue colour.

It is convenient to prepare ozonic ether from solvent ether and the stronger solutions of hydrogen peroxide of commerce. It was decided therefore to determine the ratio in which these liquids should be used. The results obtained may be of interest, and are recorded here.

TABLE I

Strength of Peroxide Soln.	Original Ratio of Ether to Peroxide Soln.	Final Ratio of Ethereal Soln. to Aqueous Ratio
6% (20 vol.)	50 : 50	44 : 56
30% (100 vol.)	50 : 50	45 : 55

Procedure.

Solvent ether was shaken with an equal volume (50 ml.) of solution of hydrogen peroxide 6 per cent. and the change in ratio of ethereal and aqueous layers noted. The procedure was repeated, using ether and a 30 per cent. solution of hydrogen peroxide. The results are listed in Table I.

The partition coefficient of hydrogen peroxide between ether saturated with water and water saturated with ether was determined. Solvent ether and varying proportions of a strong solution of hydrogen peroxide were shaken together and each layer was assayed by pipetting a sample into water and dilute sulphuric acid and titrating with N/1 potassium permanganate. The results are shown in Table II.

TABLE II.

Ratio of water satd. with ether to ether satd. with water in presence of hydrogen peroxide.	Ratio of hydrogen peroxide concentration in water satd. with ether to concentration in ether satd. with water at 15 deg. C.
67 : 206	5.7 : 1.0
70 : 245	5.3 : 1.0
30 : 148	5.2 : 1.0
28 : 220	5.5 : 1.0
25 : 272	5.4 : 1.0
13 : 200	5.7 : 1.0

$$\text{a.v.} \frac{c_{\text{water}}}{c_{\text{ether}}} = 5.5$$

Comments.

The data in Tables I and II enable—

(1) Ozonic ether to be made from any strong hydrogen peroxide solution the strength of which is known; and

(2) the strength of the ozonic ether to be varied by changing the ratio in which the two liquids are mixed.

Table III shows the calculated strengths of the reagent when prepared according to the 1949 Codex.

TABLE III.

Orig. conc. of H_2O_2 in solution of hydrogen peroxide.	Calculated conc. of H_2O_2 in resulting ozonic ether
5% w/v	0.71% w/v (equiv. to 2.4 vols avail. oxygen)
6% w/v	0.85% w/v (equiv. to 2.8 vols avail. oxygen)
7% w/v	0.99% w/v (equiv. to 3.3 vols avail. oxygen)

Table IV indicates—

(a) the proportions in which solutions of hydrogen peroxide of various strengths and solvent ether should be mixed to give average B.P.C. strength; and

(b) the proportion in which such solutions must be mixed to give various strengths of ozonic ether.

TABLE IV

Concentration as w/v % of H_2O_2 in peroxide solution	No. of volumes of solvent ether shaken with 1 vol. of peroxide soln.	Calculated conc. as w/v % of H_2O_2 in resulting ozonic ether.
6	0.5	0.96
6	0.25	1.02
9	1.0	1.28
9	2.0	1.05
9	3.0	0.89
9	4.0	0.77
30	10.0	1.44
30	15.0	1.05
30	20.0	0.83
30	23.0	0.73

Discussion.

Large volumes of ozonic ether are used in many hospitals and its manufacture in the hospital pharmacy results in considerable economy. It is cheaper to prepare the reagent from solvent ether and a strong hydrogen peroxide solution than from solvent ether and the official peroxide solution.

Some reasons for this are—

(a) strong peroxide solutions are cheaper than weaker solutions containing comparable amounts of peroxide;

(b) less hydrogen peroxide is needed, because a smaller volume of aqueous liquid is rejected; and

(c) less ether is lost by solution in the aqueous layer.

Ozonic ether should be stored so as to eliminate or minimise loss of ether by evaporation. If the container

is not closed satisfactorily the hydrogen peroxide concentration increases. Loss of ether with subsequent concentration causes trouble when ozonic ether is measured by pipette. In assaying the etheral peroxide solution to obtain the partition coefficient (Table II), care was taken to minimise concentration—the temperature was relatively low, and the pipette was held obliquely when filling to reduce the "head." Varying degrees of success probably account for the variations from 5.2 to 5.7 shown in the second column of Table II. The ratio c_{water}/c_{ether} is probably low, but will not affect appreciably the figures in Table IV.

Summary.

1. Statements relating to preparation of ozonic ether are considered. A discrepancy is noted.

2. Data are presented from which it is possible to calculate the ratios in which strong hydrogen peroxide solution and solvent ether may be mixed to produce ozonic ether.

3. A short-coming of the analytical procedure is noted.

THE TESTING OF GANGLIONIC PARALYSANTS

By F. H. Shaw and J. F. Mainland.

In a series of papers Professor Shaw and co-workers have shown that there are two pharmacologically distinct groups of cells in sympathetic ganglia; one group of cells giving rise to vasoconstrictor fibres and the other to vasodilator fibres.

In an attempt to substantiate further this theory, a number of ganglionic blocking agents were tried on cats. The superior cervical ganglion of the cat is considered to be a suitable and in some cases an unrivalled test object for analysing the effects of ganglionic blocking agents. One reason for this is that it is very easy to record the activity of the superior cervical ganglion by measuring the extent of contraction of the nictitating membrane, to which some of the post-ganglionic fibres run. Man, of course, does not possess a nictitating membrane, therefore if the results of tests on ganglionic blocking agents are to be transferred to man, and the tested substances used clinically, it would be better if a comparable organ or test object that is to be found in man be used in the first place to analyse the actions of these compounds.

The superior cervical ganglion in the cat, besides having fibres running to the nictitating membrane, also innervates the blood vessels in the ear. We have recorded and compared the contraction of the nictitating membrane and the constriction of the ear vessels to stimulation of the pre-ganglionic fibres to the superior cervical ganglion while the animal is subjected to various ganglionic paralysants.

Throughout these experiments electrical recording was used.

The contraction of the nictitating membrane was recorded by means of a condenser strain gauge, amplifier and chart recorder, and a photo-electric method was used to record the constriction and dilatation of the blood vessels in the ear. The blood pressure of the animal was also recorded by means of a capacitance manometer similar in design to the Swedish one devised by Hansen. The contraction of the nictitating membrane, the vaso-constriction and dilatation in the ear and the blood pressure were registered on three ink-writing chart recorders. All paralysants were administered by direct injection into the common carotid artery, the blood supply of the ganglion being left intact.

As an index of the drug studied we have measured:

(a) the duration of complete paralysis of the nictitating membrane and of the ear vessels,

(b) the time to recovery of these two test objects.

In general we have found that after paralysis the responses differ in that the time taken by the nictitating membrane to first show a response differs from the time taken by the ear vessels.

One animal had a complete paralysis time (to T.E.A.B.) for the nictitating membrane of 30 sec. and a complete paralysis time for the ear vessels of 16 min.

A similar result to the one shown for T.E.A.B. was obtained for pentamethonium iodide, or C5. In the case of tubocurarine and dimethyl tubocurarine the result is reversed, and the response of the ear vessels is affected more than the response of the nictitating membrane.

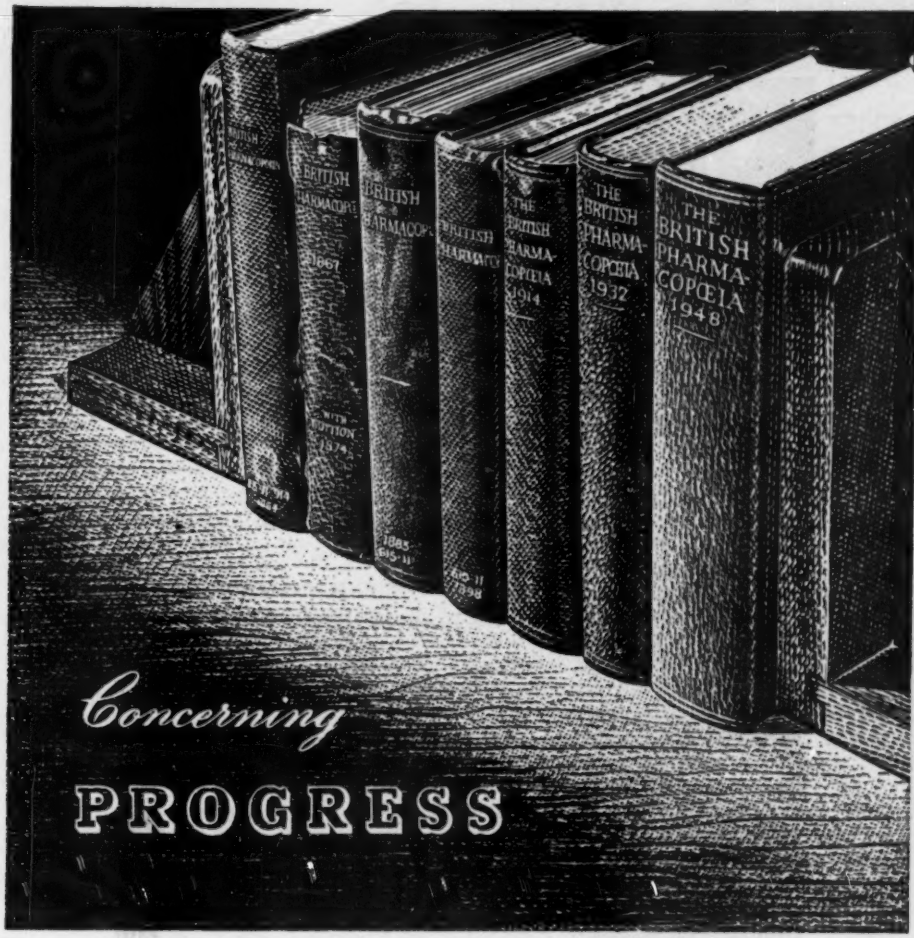
The times indicated for each drug are the result of a number of experiments, the average figure being shown. Although differences are apparent in the times to complete recovery, they are not quite so marked as the paralysis times.

Pendiomide is a relatively new paralysant put out by Ciba. Its basic structure is similar to the methonium compounds, except for a methylated -N- in the centre of the carbon chain and one ethyl substituent on each nitrogen.

Throughout reference has been made to the ear vessels or the nictitating membrane **response** being more or less affected by a paralysant, rather than saying that the **cells** in the superior cervical ganglion supplying fibres to these two areas are more or less affected by the drug. The reason for this is that we have yet to show that it is **at the ganglion** that the paralysants are causing the differential action. It is quite possible that these compounds give these results by acting peripherally or at both the ganglion **and** peripherally. We intend to check this by repeating the work and stimulating the post-ganglionic fibres while the ganglion is still paralysed. If a differential response is **still** obtained, then the drug is, of course, acting peripherally as well.

If it can be shown that the effects we have obtained are ganglionic in origin, then it may be better to test blocking agents by using the ear vessels rather than the nictitating membrane. However, the question arises: "Do the ear vessels possess the singular physiological advantage that the nictitating membrane of the cat possesses, i.e. are they **only** innervated by post-ganglionic fibres from the superior cervical ganglion, or do they relay at another ganglion on the way?"

	Duration of paralysis (mins.)		Duration to complete recovery (mins.)	
	Ear vessels	nictitating membrane	Ear vessels	nictitating membrane
D-TUBOCURARINE chloride 0.2 mg./kg.	22	10½	30½	29½
DIMETHYL TUBOCURARINE iodide 0.3 mg./kg.	12½	3½	30	12
PENTAMETHONIUM iodide 2.5 mg./kg. (C5)	5	11	31	39
TETRAETHYL AMMONIUM bromide 7 mg./kg. (T.E.A.B.)	7	13½	10	25½
"BENDIOMIDE" 2 mg./kg.	8	8½	16	16



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A consideration of this possibility may lead to an explanation for the differential results that we have obtained. The work of Guyton and Reeder and that of Paton and Zaimis show that different ganglia vary in sensitivity to a particular blocking agent. As far as we know the ear vessels are innervated directly by post-ganglionic fibres from the superior cervical ganglion. To our knowledge there is no reference on the innervation of this area of the cat yet recorded. We are at the moment carrying out the dissection of this area to elucidate this anatomical point.

Whatever the outcome of these proposed experiments, the fact still remains that the response of the nictitating membrane itself does **not** give a precise picture of the action of the various ganglion blocking agents used.

One other interesting point arose out of this work. The compound flaxedil or gallamine triethiodide was tried and found to give varying results. It is a neuromuscular blocking agent exerting very little autonomic ganglion blocking action. However, in about one animal in three we found that it brought about a **potentiation** of the ear vessel constriction on stimulation, and had very little effect on the nictitating membrane response.

Although the example does not show more than a 3-4 fold increase, some have given up to a 6-fold increase.

It could be said that flaxedil possesses anti-choline esterase activity, and thus brings about the potentiation **at the ganglion.** However, this idea is contra-indicated by the findings of Mushin in 1949. He showed that flaxedil does not possess this property.

Again, as with the ganglionic blocking agent, stimulation of the **post**-ganglionic fibres will assist us to pinpoint just where flaxedil is causing this enhancement, but we still have no explanation for it.

THE NATURE OF THE DISTRIBUTION OF Na AND K IN NERVE AND MUSCLE CELLS

By F. H. Shaw and Shirley E. Simon.

In this talk I propose to consider certain aspects of the unequal distribution of the inorganic salts between the cell interior and the fluid bathing these cells. By way of introduction let us look at the actual concentrations: In man the Na and K concentrations in the plasma are respectively 130 and 4 milli-equivalents per litre. In red blood cells there is 12-20 meq/l Na and 150 meq/l K. Similar ratios exist in other cells throughout the body.

The central problem is twofold. How does this distribution originate, and how is it maintained? Of the many theories let us consider a few which are current at the present time. To begin with, the results of most workers make it clear that the large differences in intra- and extra-cellular K cannot be related to any simple ion binding. This does not exclude the possibility that the K is attached within the cell in the same manner as it would be bound on an ion exchange column, as was suggested at the last A.N.Z.A.A.S. conference by Prof. Wright. However, the Na ion may be specifically bound within the cell, that is there may be a marked decrease in its activity in the chemical sense.

One of the earliest of the modern theories is that of Mond and Netter[1], who stated that the cell membrane was permeable to K and H ions, and impermeable to Na and Cl ions. Boyle and Conway[2] developed this theory with the assumption that the membrane was permeable to K and Cl ions, and impermeable to Na. K would then accumulate passively as the result of a double Donnan equilibrium. This effect arises from the electrical potential gradient set up by the non-penetrating colloidal anions within the fibre. However, most recent work shows that the cell wall is permeable to all the inorganic constituents of its environment. This has been demonstrated by the following interesting experiments. Heppel[3] fed rats on a diet deficient in K, and found that the K in the muscle cells decreased, and was replaced by Na. Conway and Hingerty[4] completed the experiment by showing that when the animals were returned to a normal diet K re-entered the cells to its original level, and Na left the cells.

The use of radio-active isotopes has shown beyond all doubt that both these ions can penetrate the cell membrane in either direction.

Levi and Ussing[5] bathed the Sartorius muscle of the frog in Ringers solution containing Na_{24}. After a time this isotope penetrated the cell, and an equilibrium was reached. The tissue was then placed in normal Ringer, and the rate at which the Na_{24} left the cell was determined. It appears that there are two phases, (a) a rapid loss from the interspaces and (b) a slower loss from the fibres. Similar results were obtained with Cl_{39}.

Thus not only are the cell membranes permeable to the ions which have been discussed, but the equilibrium between the cells and their surroundings is dynamic and not static. That is to say there is a continuous passage or flux of ions in either direction. The rates are given by the permeability constants. For Na the permeability constant in-out is less than the constant out-in. The reverse is true for K. The permeability constants are a function of the area of the interface, time and the concentration gradient. Again by means of isotopes it is possible to determine both of these constants. It must be remembered, however, that the measurement of these constants only tells us what is happening, and does not give any suggestion as to mechanism.

Let us now consider some possible mechanisms.

We have seen that simple concepts of impenetrability are untenable, and are therefore unable to account for the ionic distributions. The fact that all ions are capable of penetrating the cell has necessitated the modification of the original Boyle and Conway theory. The next suggestion followed from the finding that active metabolism is necessary for the maintenance of the ratio of Na to K. For instance, when the R.B.C. is deprived of glucose or placed at a low temperature (3-4° C.) there is a loss of K and gain of Na, which is reversed on returning the cells to their normal environment. To account for this and other results it has been assumed that Na is extruded from the cell by a process requiring metabolic work, and the term "Na pump" has been coined.

K is assumed to accumulate passively, due to the non-penetrating anions of the cell (protein, etc.). This is following on the general lines of the Boyle and Conway theory, though it is stressed that an active uptake of K as well as an extrusion of Na may take place.

Ussing[6] has calculated the energy needed to move a Na ion from the interior of the cell to the surrounding medium, against the concentration gradient, and states that it would require a large fraction of the resting metabolism of the cell. Davson[7] has suggested, therefore, that at some stage of the extrusion Na is present in the unionised form.

Further interesting suggestions to account for the mechanism of transport have been made by Osterhout[8] and by Steinbach[9]. Osterhout assumes that the protoplasmic surface is covered by a non-aqueous layer which is permeable to molecules, but almost impermeable to ions. Hence free ions cannot enter except in very small numbers. The ions combine at the outer surface with organic or carrier molecules, and are thus able to enter freely. If upon reaching the aqueous protoplasm these molecules are decomposed, so as to set the ions free, they must be trapped inside the cell, since they cannot pass out except in very small numbers. However, it must be obvious that this mechanism could only result in a transport of ions, and

not in an accumulation greater than that existing outside the cell. However, accumulation or more generally active selective transport could be accounted for in Steinbach's extension of this theory.

S environment	(membrane) $+ X \rightleftarrows SX$ $\Downarrow$ $Y + Z$ metabolic cycles	S $\rightleftarrows$ protoplasm

I feel that this theory could be extended further. Within the membrane there is a system whereby the energy from the metabolic cycle is used to couple the ion with a carrier. It is necessary to assume that this compound will have a high free energy, so that on leaving the environment of the membrane there will be a high probability that decomposition will take place. This decomposition may be facilitated by an enzyme.

Perhaps it is time to stress that the cell interior cannot be regarded as a homogeneous mass. Surely the multitude of enzymes, numbering more than 100 in the yeast cell, are not scattered at random, but each is in its allotted place. If this idea be granted, then it is not difficult to see that an ionic complex formed at one part of the cell could be split at another.

Before discussing our own experimental work I should like to indicate the main lines of approach to this problem. There are two: the use of isotopes and the method of chemical analysis. The isotopic method has the advantage that the cells to be investigated are maintained in a natural environment and not subjected to abnormal ionic concentration, as they are in the chemical methods. The isotopes (K_{42} or Na_{24}) may be added to the external fluid, and the rate of appearance in the cells noted by means of a Geiger-Müller counter. Alternatively the cells are allowed to equilibrate with the isotope, and are then placed in a non-isotopic medium, and the rate at which the isotope leaves the cells is determined.

In the chemical method the cells are placed in an ion rich or deficient medium, and the amount of the substance entering or leaving the tissue is determined by chemical analysis. It is this latter method which we have used to obtain our preliminary results. It is our intention later to combine the chemical and isotopic methods, as up to the present few workers have adequately followed the net changes in ionic concentration which accompany the fluxes.

One would think that if muscle or nerve were placed in a salt solution equivalent to that of plasma there would be no ionic shifts. This is not the case; for example, muscle loses K and gains Na. It is the effect of H ion concentration on these shifts which we have investigated in the Sartorius muscle and sciatic nerve of the toad, Bufo marinus.

The muscles or nerves were removed from the animals, weighed and placed in flasks containing Ringer's solution, the pH of which had been adjusted by altering the bicarbonate content, and finally gassing with a mixture of 5% Co_2 and 95% O_2. After soaking for from four to nine hours at 25° C. the preparation was removed, blotted, weighed and dried at 105° C. The two wet weight weighings enabled us to follow any volume changes. The tissues were then ashed, and the Na and K estimated with a Beckman flame spectrophotometer.

The following results were obtained (see graph in next column):—

We have been unable in the time at our disposal to analyse fully these results, but the following conclusions are immediately apparent:—

(1) The dip in the Na curve at the physiological pH. The pH of toad blood is pH 7.25. This could be explained by an enzymic system. A similar finding has been made by Davson[10] with cat erythrocytes.

(2) The K loss decreases with increasing pH. The simplest explanation would appear to be the result of the well-known increase in the base binding ability of the intra-cellular protein with increasing pH. The explanation, however, is not meant to exclude the possibility of an active uptake of K. Ponder[11] had obtained similar results with the uptake of K by deficient R.B.C., and he talks of an active K accumulation.

(3) The non-reciprocity of the Na and K exchange. All theories which consider the uptake of K to be passive require that any alteration of the Na concentration within the cell should be followed by an opposite change in the K content. It is obvious from our curves that this is not always the case.

(4) Non-generality of results. There has been a consistent endeavour among cell physiologists to obtain one theory to account for the ionic distributions in all cells, irrespective of their function. It will be quite obvious from our results that the behaviour of nerve and muscle cells with respect to alteration in the pH of the surrounding medium is quite different, and it would be difficult to include the results in one theory.

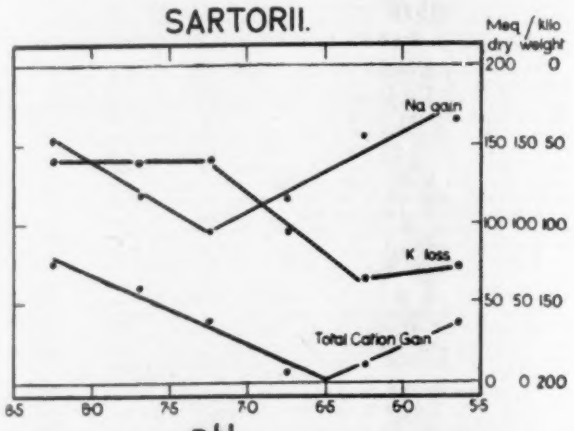
The main differences in nerve and muscle behaviour are:

(1) The Na dip is absent in nerve.

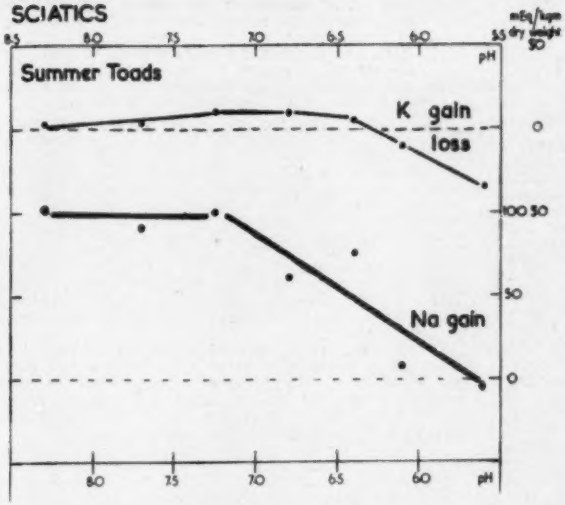
(2) There is very little change in the K concentration with alteration of pH.

(3) The Na concentration increases with increasing pH, again perhaps due to the base binding of the protein.

Our results at present would lead us to suggest that there is no mechanism in nerve for the active extrusion of Na, or at least a mechanism which does not resemble muscle. We realise the stress which Katz and Hodgkin[12] have placed on the Na extrusion mechanism to explain



Each point is average of at least twenty-four muscles



the passage of the nervous impulse, and we are fully aware that a more detailed analysis of our results would be necessary before this theory could be seriously challenged.

(4) The data we have just given for the ionic changes in nerve were obtained during the months of June and July and did not agree with our earlier results. This we have attributed to a seasonal variation. Such a variation is not unknown in the literature. We were at first alarmed at these discrepancies, but as they occurred with such regularity it soon became obvious that this was the normal behaviour for these particular toads, and we feel the results are worthy of discussion.

In the first place the normal ionic content of the tissue underwent a change, which was more marked in nerve than in muscle.

Table 1. Seasonal Variation in Ionic Content of Nerve and Muscle.

	Summer Na	Winter Na	Summer K	Winter K
Sartorii	128	120	410	432
Sciatics	230	447	100	161

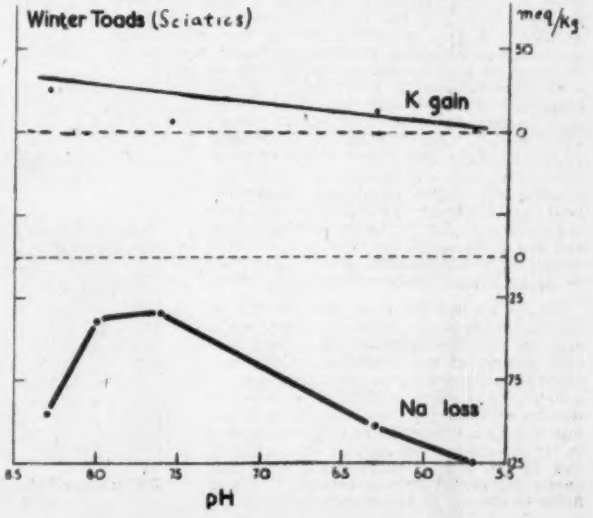
More remarkable, however, was the loss of Na on soaking in normal Ringer. As far as we know a similar loss from a Na deficient cell has not been previously described. The first explanation which occurred to us was that as the winter toads contained 95% more Na than the summer toads, the intracellular fluid might be hypertonic with respect to Na of the Ringer. Our calculations show that this is not so. It is quite clear that the Na is coming out of the cell against a concentration gradient.

Volume Changes.—It is well known that muscles and nerves when placed in a hypotonic solution are capable of swelling, and one would expect that if the total intracellular cation increased, without ionic binding, there would be an increase in volume. We have examined statistically our wet weight changes on soaking, and have been unable to detect an increase in volume in either muscle or nerve.

Conclusions.—There is a Na pump-in muscle, which depends on the metabolic functions of the cell being intact. It is most efficient at the pH of toad's blood. A similar mechanism seems to be absent from nerve. There may be a method of Na extrusion in nerve, but of a different nature to that in muscle.

It seems probable that K is assimilated into the nerve and muscle by some part of chemical affinity, and is not only accumulated as a result of Na exclusion. This is more marked in nerve than it is in muscle.

The failure of the increased intracellular total cation to cause swelling introduces the possibility that some of the Na is bound in a form which is not osmotically active.



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THE EFFECT OF CENTRAL NERVOUS STIMULANTS UPON THE ACTIVITY OF WHITE MICE

By L. B. Cobbin.

This work was undertaken in order to develop screening tests for drugs which might conceivably be administered to horses and dogs with a view to improving or retarding their performances. Chance in 1947 (J. Pharmacol., 1947, 89, 289) had observed that the presence of several mice in a box was sufficient to lower the $L.D_{50}$ of benzedrine in mice, i.e. increase the toxicity. He also recorded that mice became more active under the influence of benzedrine (J. Physiol., 1944, 103, 13). We confirmed these results, and decided that if a sufficiently sensitive measuring apparatus could be devised, then activity might be used as an index for the detection of small quantities of central nervous stimulants and depressants.

Accordingly, we set about designing and constructing an electronic apparatus to pick up small changes in activity of mice, the chosen test animals. The mice were placed in a cage, the floor of which was attached to a condenser plate. The cage was mounted on rubber, and movements of mice were sufficient to cause the cage to move, and as a result the condenser plate moved. About a millimetre from the movable plate was mounted a fixed plate. These two plates formed a condenser, whose capacity varied as the plates were brought closer together or moved further apart. The condenser was then made part of an oscillator circuit, and a condenser of similar capacity was mounted in a standard oscillating circuit. When the mouse was active the two oscillators became out of phase and produced a signal which was sent into an amplifying circuit and recorded on a continuous recording milliammeter.

A dose level of 10 mg./Kg. benzedrine was sufficient to produce marked increase of activity in a single mouse, but the disadvantage was that there was no control over the experiment.

Technical difficulties precluded the construction of a large number of cages, so as to have more than one mouse to test and run control experiments simultaneously. A new condenser system was constructed consisting of a number of square plates of brass sheet mounted on a glass surface, in the form of a chessboard, with all the "white" squares connected together and all the "black" squares connected to each other, but "black" and "white" squares insulated from each other. Now a mouse placed on top of those will cover greater or lesser amounts of the squares as he moves about, and because his body is a conductor will in fact act as a moving condenser plate of almost constant area, and the system will function as a variable condenser whose capacity is continually altering as a result of the mouse's movements.

We set up two sheets of glass, each containing six cages, one set for control animals, and one set for experimental animals. A new method of recording the activity was adopted, since continuous recording was not suitable for 12 mice. Instead of every signal writing on the record, an integrating circuit was installed, where the signals were stored in condensers for two minutes and summed, and at the end of that time a switching device discharged the condensers. This was made to operate in two ways:

(a) One set of condensers discharging slightly after the other set, the record then showing the activity of both groups.
(b) Both sets discharged simultaneously, so that only the excess of charge of one set over the other was recorded. This corresponded to the excess of activity of one group over the other.

With this arrangement we found the minimal quantities of central nervous stimulants which could be detected with certainty.

One feature which was immediately apparent was that some drugs did not influence the mice, whereas others produced marked effects. Strychnine and metrazole did not influence the activity until convulsive levels were reached. Caffeine citrate in extremely large doses (200 mg./Kg.) caused slight increase in activity, and doses of 600 mg./Kg. did not produce a great deal more activity. Coramine (nikethamide) did not markedly increase activity, but benzedrine and morphine in low doses were capable of increasing the activity considerably.

In all cases the control mice which received saline were more active than mice receiving the test drug for a period of 15 minutes or so, and then the drug was absorbed, and started to exert its effects, which lasted for about two hours, depending on the drug used and also the quantity of drug administered.

A method for making the apparatus more sensitive for detecting metrazole is to prime both groups of mice with a sub-convulsive dose of caffeine citrate. After 15 minutes one group is given metrazole and the control group given saline. The caffeine citrate and metrazole exhibit a marked synergism together, and the $L.D_{50}$ is lowered considerably, i.e. the toxicity is increased. This synergism has not been tested in the activity cage as yet, but is on the programme for the near future. A similar synergism exists between benzedrine and coramine, but this has not been tested either.

Morphinised mice at low dose levels are not apparently much more active than mice receiving saline. However, if both groups are sedated but not anaesthetised by prior administration of barbiturates (25 mg./Kg.) the effect of the morphine shows up quite well.

More drugs are to be tested, including the local anaesthetics cocaine and procaine, the opium alkaloid heroin, and a variety of others such as picrotoxin, atropine, digitalis, ephedrine, quinine and yohimbine, all of which have been used in U.S.A. for doping horses.

Also on the programme is the testing of salivary swabs and urine samples from horses.

At Sublime Point (l. to r.) Mrs. A. G. Davis, Mrs. A. W. Callister, Miss June Davis and Mr. A. W. Callister.

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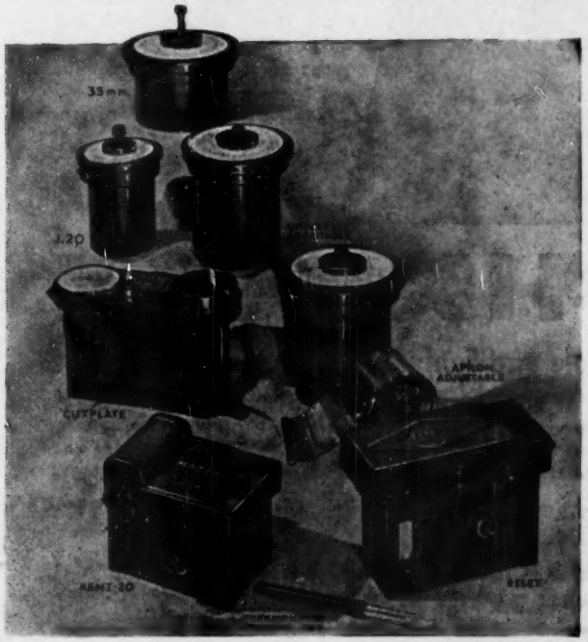

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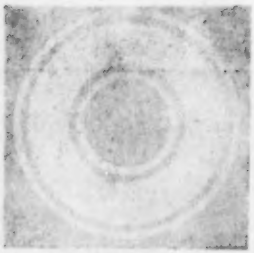

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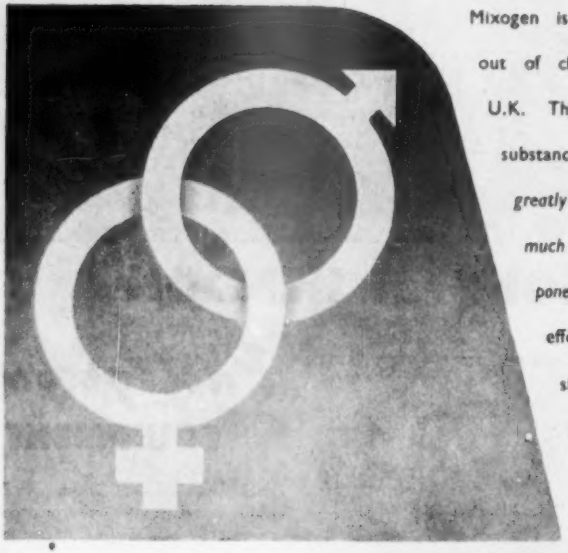

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RECENT ADVANCES IN OUR KNOWLEDGE OF AUSTRALIAN ESSENTIAL OILS

by
A. R. Penfold, Director, and
F. R. Morrison, Deputy Director,
Museum of Applied Arts and Sciences, Sydney.

(Paper read before Section "O," A.N.Z.A.A.S. Meeting, Sydney, August 26, 1952.)

Since the end of World War II our investigations into the oil yielding flora of Australia have followed different lines to those hitherto pursued. For over 50 years we had concerned ourselves mainly with elucidating the chemical composition of the volatile oils obtained from the foliage, bark or wood of Australian plants. Many of you are aware of the results which have been achieved during that period with the Eucalypts and Tea Trees.

It was decided in 1939 to investigate more fully the occurrence of the physiological forms (the term "physiological form" is applied to those plants which are botanically identical, but which yield essential oils of diverse chemical composition). The objects of the new investigation were (a) to ascertain the role of the essential oil in the plant, and (b) to establish experimental plantations of the principal oil yielding flora using seeds from selected trees. The main objective of the work under (b) was to determine whether the species and individual trees breed true in respect to oil yield and oil type, and to ascertain if the selected parent trees are superior to other trees of the same species with respect to such characteristics as vigour of growth, ability to recover rapidly after cutting, yield of oil and the chemical composition of the oil.

The time seemed opportune for such investigations in order to safeguard the future of the Australian essential oil industry. Most progressive countries are today evincing considerable interest in Australian oil-yielding plants, and are seeking seeds for the establishment of their own plantations. It was realised that such potential overseas competition would be best met by ensuring the establishment of our own commercial plantations on strictly scientific lines, instead of relying entirely on our natural forest stands. It is obvious, for example, that a plantation of even limited area, consisting of trees each yielding 4 per cent. of oil, is a better economic proposition than a very large natural stand, the trees of which yield from 1-4 per cent. of oil.

It has also been found desirable to seek alternative sources for some well-known essential oils, which are not now available. A notable example is Huon Pine wood oil. Quite interesting advances have been made in these studies. A selection only of those which will appeal to members of Section "O" will be discussed here.

Huon Pine Wood Oil.—This oil, which was placed on the market over 20 years ago, was obtained from the waste wood and shavings of the Huon Pine (Dacrydium franklini), a well-known Tasmanian timber. It contained about 90-95 per cent. of methyl eugenol. This oil was unsurpassed for the extermination of the powder post and furniture borers, and as a preservative for water paints and similar preparations based on casein. It possessed marked germicidal properties, and was used in the treatment of tinea and perionychia.

It is regretted that after 20 years of pioneering effort, the oil should now be unprocurable. Soon after 1945, it was found that continuity of supply could not be maintained owing to the inaccessibility of the forests on the west coast of Tasmania. This oil came into prominence during the war as an insect repellent, particularly against mosquitoes, March flies and sandflies. Unfortunately, it was found to possess an irritating effect on the skin, and produced nausea in certain individuals when applied to the face. Pure methyl eugenol produced the same effects. Nevertheless, it is still the most effective repellent against sandflies.

Huon Pine wood oil was also subsequently tested by Mr. R. W. Kerr, of the C.S.I.R.O., as an adjuvant for pyrethrins in fly sprays. The term "adjuvant" is applied to those essential oils or other substances which increase the toxicity of pyrethrum solutions when used as fly sprays. Substances like essential oils rich in phenol ethers possessing adjuvant activity, are non-toxic to houseflies when used in a 2 per cent. concentration of kerosene. When added in the same concentration to a pyrethrum spray, the toxic effect against flies is greatly increased.

The sudden disappearance of Huon pine wood oil has stimulated interest in other Australian oils rich in methyl eugenol. The most promising one at this date is Melaleuca bracteata oil, which contains from 60-90 per cent. of methyl eugenol. This oil is not yet available in commercial quantities in Australia, but supplies can be obtained from Kenya, where plantations have been established from seed sent from this country. Although the yield of oil from the foliage of Melaleuca bracteata (0.75-1.0 per cent.) is much lower than that obtained from the sawdust, shavings and waste wood of the Huon Pine (2.5 per cent.) it is in reality a better commercial proposition. The foliage of Melaleuca bracteata can be removed from time to time without detriment to the tree, whereas the Huon Pine is actually destroyed, as the trees are cut for milling purposes.

An interesting feature of the investigation on the oil of Melaleuca bracteata is the discovery of two physiological forms, which are rich in both methyl isoeugenol and elemicin, respectively. There is a great future before essential oils rich in any one of the phenol ethers, whether it be methyl eugenol, methyl isoeugenol or elemicin. All three phenol ethers are of value as adjuvants in the production of pyrethrin sprays. It has been shown that the adjuvant activity of these phenol ethers is directly related to the number of methoxy groups (OCH_3). Elemicin has three such groups. Briefly, the effectiveness of the active phenol ether in an essential oil used as an adjuvant, is due largely to the presence of methoxy groups in association with an allyl or propenyl side chain.

Apart from their uses as adjuvants, these naturally occurring phenol ethers are a source of basic materials for the perfumery and other trades. This is one of the reasons why we have established experimental plantations of Melaleuca bracteata and its two physiological forms.

Leptospermum citratum.—The oil of the type containing 75-85 per cent. citral and citronellal, is a well-known Australian essential oil. It is used for the production of citral, citronellal and citronellol. Relatively small quantities are produced in Australia, but the bulk of commercial supplies of this oil comes from Kenya. Two physiological forms have also been observed with this species, Variety "A" consisting mainly of terpenes, and Variety "B" consisting mainly of the alcohols, citronellol and geraniol with their acetic acid esters. In short, it means that the aldehydes present in the type have been replaced by the corresponding alcohols and esters in Variety "B."

Experimental plantations of Variety "B" have also been established, as its importance cannot be overestimated. You will appreciate the fact that it requires costly plant and considerable technical "know how" to produce the rose alcohol—citronellol—from citronellal. It requires little imagination to realise what it means to have this accomplished by nature instead. So far, most of our physiological forms breed true, but we have yet to determine if this applies to Variety "B," for there are indications that this form is the result of hybridisation.

Eucalyptus citriodora.—The oil of E. citriodora, the well-known lemon scented gum of Queensland, has been distilled and marketed for over 50 years. The normal citronellal content has rarely fallen below 65 per cent., although it ranges up to 85 per cent. Of recent years, however, the aldehyde content of many

commercial consignments has fallen to as low as 40-50 per cent., and this has contributed to a marked decline in our exports. A long series of investigations has shown that there are physiological forms of E. citriodora, the most notable one being Variety "A" in which most of the citronellal has been replaced by the corresponding alcohol citronellol. The oil of this new variety consists mainly of citronellol and its acetic and citronellic acid esters, with less than 10 per cent. of citronellal. It would appear beyond doubt that the occurrence of these physiological forms in the forest areas around Maryborough, Queensland, is responsible for the low citronellal content of many commercial consignments of E. citriodora oil.

Here again, experimental plantations have been established, and we hope within a reasonable period to have sufficient data available to enable large commercial plantations to be established. The oil of E. citriodora is in demand as a source of citronellal for the manufacture of citronellol, hydroxycitronellal, and the important pharmaceutical and flavouring product, laevo menthol. I need hardly remind you what it will mean to the perfumery industry if we can establish plantations of E. citriodora yielding an essential oil consisting almost mainly of the rose alcohol — citronellol.

These investigations are of a long-range nature. The results already obtained justify our contention that the continuance of such researches is essential if we are to derive the utmost benefit from one of Australia's greatest assets — its oil yielding flora.

THE NEWER ANTITUBERCULAR DRUGS

By N. H. Turnbull.

(Abstract)

Tuberculosis is a very difficult disease to counter because it cannot be detected until it is well established. The normal body defence mechanism is then ineffective as the invading organisms are mainly protected inside tubercules. This means that any treatment must be prolonged, and in consequence drug resistant organisms may appear.

Many drugs which have shown high in virtro activity are useless in vivo. Effective compounds must be able to penetrate the tubercles in order to exercise their lethal properties.

The first compounds which showed promise were the sulphones. They were investigated when sulphanilamide (I) was discovered since their structure was similar.

While possessing high anti-bacterial activity, the sulphones, particularly the 4,4'-diamino (II) and 4,4'-dinitro compounds, were too toxic for human use. However, since nothing else as good was available the diamino compound was tried for tuberculosis. Results were poor because of the limitations of dosage imposed by the high toxicity, and attempts were made to prepare less toxic derivatives. A number of more soluble and less toxic compounds such as Diasone, the sodium formaldehyde sulphoxylate derivative, were prepared. Unfortunately, they were also less effective, and this type of drug has been discarded.

Streptomycin, which was isolated during an investigation of the antibiotic substances produced by moulds, is the most important anti-tubercular agent. Although streptomycin was chosen as being the least toxic of the highly antitubercular compounds isolated, it produces many undesirable effects. The most important of these are renal damage, blood changes and, quite often, deafness, which may be permanent. The only related compound which has been found of value is dihydrostreptomycin, which is very similar in its properties. The tubercle bacillus quite rapidly develops a resistance to streptomycin which cannot be countered by increasing the dose past a certain stage.

Para-aminosalicylic acid was introduced by Lehmann of Sweden, following the work of Bernheim. Bernheim showed that benzoic and salicylic acids increase the oxygen uptake of the tubercle bacillus, and study of the mechanism led him and his co-workers to the belief that this oxidation was an important metabolic reaction of the bacillus. Various substituted benzoic and pyridine carboxylic acids were tried in an attempt to stop or retard growth. Certain iodine compounds, notably 2,3,5-triiodobenzoic and 3,5-diiodosalicylic acids, were shown to be capable of preventing growth. When tried in infected guinea pigs the effective dose was found to be greater than the lethal dose, and although treated animals shower fewer symptoms of T.B. damage than the controls, they still died.

Lehmann tested a large number of salicylic acid derivatives and found para-aminosalicylic acid (PAS) (III) the best. Some structural variations can be made without abolishing activity, but, despite many attempts, no more active compound of this class has yet been unearthed.

Mr. N. H. Turnbull.

Human trials showed PAS to be of some value, but large doses of about 30 grams a day are required. This derivatives and found para-aminosalicylic acid (PAS) is mainly used in combination with streptomycin as it retards the development of drug resistant T.B. strains.

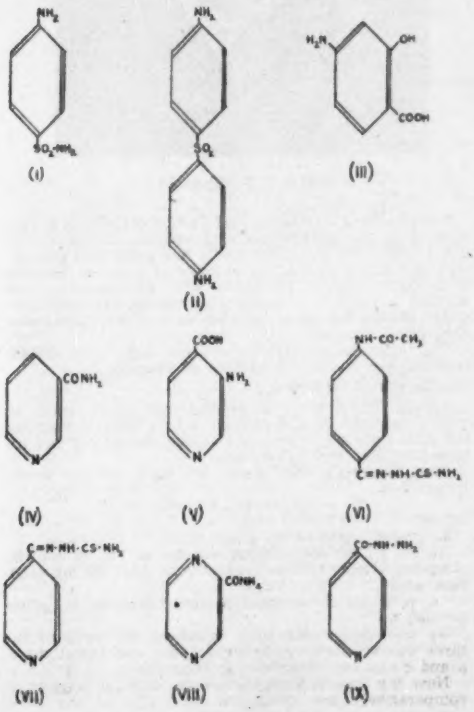
The Frenchman, Chorine, reported in 1945 that nicotinamide (IV) was useful in the treatment of T.B. in animals, whereas nicotinic acid was not. The doses used were about 1000 mgm. per kgm. Because of this and since the acid was of no use, he did not consider that the action was connected in any way with nicotinamide's vitamin activity. Later, McKenzie, in the U.S.A., also reported nicotinamide's activity, and tried a number of derivatives. None of these were as active, but some, with substituents on the amide nitogren atom, exhibited a lesser effect. Nicotinamide has found no application in human treatment as the dose required—100 to 125 grams a day—causes kidney and liver damage.

Fox has published reports of attempts to find other useful pyridine carboxylic acids or derivatives, but only 3-amino-isonicotinic acid (V) and its methyl ester showed any activity, being about half as potent as nicotinamide.

The next development occurred in Germany. Domagk, who in 1935 introduced Prontosil, the first sulphonamide, had observed that sulphathiazole and sulphathiadiazole had a weak anti-T.B. activity. A series of similar compounds were then synthesised to try and find more active substances. Some of the intermediates were prepared by cyclising thiosemicarbazones, $R.CH{=}N.NH.CS.NH_2$. These thiosemicarbazones were also tested, and turned out to be much more active than the sulpha compounds. A systematic investigation showed that activity was confined to the thiosemicarbazones and that the most active of these were certain para-substituted derivatives of benzaldehyde. Para-acetamidobenzaldehyde thiosemicarbazone (VI), also known as "Conteben," "Tibione" or "T.B.I.," was selected for extensive trials.

Very encouraging results were at first obtained, but these probably seemed outstanding, largely since many of the patients treated had been only recently relased from concentration camps, and the combination of good food, good living conditions and freedom of itself caused improvement. The dosage used is about 3 mgm. per kgm orally. Larger doses cause severe toxic reactions which may sometimes appear with the smaller quantities. Its place in therapy seems to be as an accessory to streptomycin.

Since thiosemicarbazones and pyridine carboxylic acid derivatives had both been shown to have antitubercular activity it was only natural that the thiosemicarbazones of α-, β and δ picolinaldehyde should be tried. The α- compound was inactive, but the β- and δ- (VII) compounds were at least as good as "Conteben." However, before any clinical tests had been reported even more promising compounds were developed which have attracted widespread attention.



The first of these was pyrazinamide (VIII) or "Aldinamide." It is structurally very similar to nicotinamide, but much more active. Clinically, it was very effective, attacking streptomycin-resistant organisms, and causing rapid improvement in the patient's condition. Unfortunately, resistance to the drug developed so quickly that no lasting results could be obtained. Toxic reactions were of a very mild nature.

Isonicotinic acid hydrazide, "ISONIAZID" (IX), the latest drug released, is more active than any other of its predecessors, with the exception of streptomycin. Preliminary work on animals gave rise to hopes that it would actually effect permanent cures. Initial trials on patients who had failed to respond to all previously known treatments were outstandingly successful. The subjects lost their fever, regained their appetite and put on weight, coughed less and felt much better. These results could not be reproduced in less serious cases where dramatic results could hardly be expected. Drug resistance develops after varying periods, as with all other compounds, but recent trials indicate that when isonicotinic acid hydrazide and streptomycin are used together its onset is very much delayed. It would thus appear that "ISONIAZID'S" main role will be as a partner with streptomycin.

It is interesting to record that reports have been made indicating that "ISONIAZID" is of value in certain mental conditions. This is not altogether unexpected in view of the pronounced euphoria produced in tuberculous patients.

Consideration of progress to date shows that while very potent antitubercular compounds have been discovered none are completely effective because the time required to control the disease is sufficient to allow resistant organisms to develop. Further advances would seem to hinge on providing a solution to this problem.

THE ASSAY OF PHARMACEUTICAL PRODUCTS BY ABSORPTION SPECTROPHOTOMETRY

By S. J. Prokhovnik.

In opening I must admit that I feel at a considerable disadvantage in reading this paper. A month or two after I had sent in my proposed subject and synopsis to the A.N.Z.A.A.S. organisers a very fine and comprehensive article by Dr. R. E. Stuckey[1] appeared under the title "The Applications of Ultra-violet Absorption Spectrophotometry in Pharmaceutical Analysis." When it is also realised that this article is fully documented and up to date, it may well be considered that any further contribution on this subject from me would be superfluous. However, by basing this lecture on the experiences in our own laboratories at Nicholas Proprietary Limited, I hope to make some small contribution to the subject without duplicating Dr. Stuckey's survey.

For the theory and general use of the spectrophotometer I can do no better than refer you to Stuckey's article[1] and the references he gives.

The introduction of direct-reading photo-electric spectrophotometers, such as the Beckmann, has not only opened up new fields of research, but has made possible the quick and accurate quantitative determination of absorption spectra.

Many organic compounds in solution have well defined absorption spectra in the ultra-violet and visible ranges. The variation in intensity of the absorption over the range can be represented by a curve, the nature of which is a function of the molecular structure of the compound, its solvent, temperature, pH, etc. This enables us to assay many common pharmaceutical products merely by dissolving them in a suitable solvent and determining their absorption at one or more

wavelengths, using the solvent as a blank. The wavelength chosen is usually the one where the absorption of the substance to be assayed is maximum, but sometimes a number of points need to be determined.

The criterion for a spectrophotometric assay is the $E^{1\%}_{1\,cm}$ value, which for practical purposes may be considered as the absorption of a 1 cm. layer of a 1% solution of a compound at a given wavelength.

We may divide spectrophotometric assays under four headings, viz.—

I. Firstly we have those assays which require only the direct determination of the absorption at the characteristic wavelength of the substance to be assayed. Under this category we have the checking of raw materials for purity and the assay of pharmaceutical products containing only one active principle and a non-absorbing base.

II. Secondly there are the assays which require correction for extraneous absorption, i.e., incidental absorption of substances other than the one we wish to determine. For this purpose, the absorption at a number of points needs to be measured. The assay of vitamins A and D are examples of this procedure.

III. In the third category are assays of mixtures of substances. This also requires the determination of the absorption at a number of wavelengths. A good example of this procedure is the simultaneous assay of phenacetin and caffeine in A.P.C. tablets.

IV. Finally there are the indirect assays in which the substance to be determined is chemically transformed to a coloured compound as the first step. The maximum absorption of this secondary compound is then determined. However, as modern photoelectric colorimeters can also achieve this purpose quite well, I will not discuss this category in detail.

I. Direct Determination:

I have listed in Table 1 a number of substances which absorb strongly in the ultra-violet or visible ranges of the spectrum. Each of these compounds has a maximum absorption (or a number of them) at a wavelength(s) which is characteristic of the compound and its solvent. It follows therefore that under the right conditions, any of these substances can be determined directly merely by measuring the absorption at their characteristic wavelength. The condition is of course that the extraneous absorption at this wavelength should be negligible. This method is applicable to the checking of raw materials and to the assay of tablets or solutions containing only one active component. Most tablet bases are non-absorbing, and hence do not affect the assay. The direct absorption assay is particularly valuable in connection with vitamin ampoule production where the potency needs to be checked at a number of stages.

Occasionally it is possible to isolate a substance by a simple extraction and then to determine its maximum absorption. For instance, phenobarbital can be separated from ephedrine with 2 per cent. NaOH and its absorption determined in the solvent at 255 mμ.

Similarly, with folic acid and Vitamin B_{12} tablets, the folic acid may be extracted with N/10 sodium hydroxide and its absorption measured separately. The vitamin B_{12}, on the other hand, is determined at 550 mμ, where the absorption of the folic acid is negligible.

I have not mentioned the hormones or synthetic hormones used in pharmaceutical products. Most of these absorb strongly in the ultra-violet and can be assayed thereby. I refer you again to Stuckey[1] for details and references on this class of compounds.

II. Correction Assays:

Vitamin A: Sometimes it is difficult or not convenient to isolate the absorbing substance completely. In such cases, however, it may be possible to estimate the extraneous absorption from the degree of distortion suffered by the curve near its maximum. An arithmetic procedure of this type has become standard for the spectrophotometric assay of vitamin A. As there have lately been a number of excellent reviews on the subject, I can do no better than refer you to them, particularly those of Bagnall and Stock[2] and of Cama and his co-workers.[3]

The assay and problems of vitamin A encountered in our laboratories have been adequately covered at a previous A.N.Z.A.A.S. conference and elsewhere.[4] I will only say here that using our knowledge of the curve for pure vitamin A and by determining the absorption at three wavelengths a geometric correction suggested by Morton and Stubbs can be made, which eliminates the extraneous or irrelevant absorption. The assumption upon which this correction is based is that this extraneous absorption at the three points considered lies in a straight line.

The correction is condensed into a simple algebraic formula which must, however, be applied with discrimination, and has been the subject of much discussion in the literature.[5, 6, 7, 8]

Mr. S. J. Prokhovnik.

Vitamin D: The Morton and Stubbs correction is also applied to the spectro assay of vitamin D. However, this vitamin has a comparatively low maximum absorption and a high biological potency—1 gram of vitamin D is equivalent to 40,000,000 I.U. Consequently the method is limited to samples containing not less than about 100,000 I.U./gm., and then only if the extraneous absorption is comparatively low.

The biological assay is still the best one, though lengthy, for medium potencies of vitamin D.

III. Assays of Mixtures:

A.P.C.: When three absorbing compounds such as aspirin, phenacetin and caffeine are in solution together the total light absorption is additive, except for any interaction that may take place.

Thus, ignoring the latter, we have at the wavelength λ_1:

$$E_1 = aA_1 + pP_1 + cC_1,$$

Where

E_1 represents the total absorption,

A_1, P_1, C_1 are the absorptions due to 1 g. of aspirin, phenacetin and caffeine respectively, per 100 ml. solution, and

a, p, c are the respective concentrations in grams per 100 ml.

By obtaining three such equations for each of the three characteristic wavelengths, the concentrations a, p and c can be determined arithmetically.

Now the aspirin absorption, even at its maximum, is comparatively low compared with that of the other

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GUIDE TO NEW PRESCRIPTION PROPRIETARIES

Our aim in presenting these references is to give a summary in regard to each product, rather than all the information available in the manufacturers' literature. Their mention in these columns does not imply editorial recommendation. Prices are no longer quoted because of frequent fluctuations.

"PROCID" Lozenges

Supplier:	Harker Stagg Limited, London.
Composition:	Each lozenge contains 100 mg. sodium propionate and 5 mg. benzocaine, in a pleasantly-flavoured base.
Indications:	Throat infections.
Dosage:	One lozenge dissolved slowly in the mouth every 3 or 4 hours. Up to 8 lozenges in 24 hours. Children under 12: 4 or 5 lozenges daily. The preparation is not recommended for infants.
Pack:	Tubes of 18 lozenges and bottles of 500.

THEPANAL

Supplier:	Knoll Laboratories, King's Cross, Sydney.
Composition:	Tablets containing Theobromine alk. gr. 5, papaverine hyd. gr. ¼ and phenobarbital gr. ¼.
Indications:	Hypertension, angina pectoris, arteriosclerosis, Raynaud's disease, etc.
Dosage:	1-3 tablets daily.
Pack:	Bottles of 20, 100, 500.

THIOMERIN Sodium

Supplier:	Wyeth Inc., Philadelphia.
Composition:	Mercaptomerin Sodium-N(γ-carboxymethylmercaptomercuri-β-methoxy) propyl camphoramic acid ($C_{16}H_{23}HgNNa_2O_6S$). 1 c.c. of solution, ready for injection, contains the equivalent of 40 mg. of mercury.
Indications:	As a mercurial diuretic in cardiac oedema, nephrotic oedema, ascites of liver disease, etc.
Dosage:	0.5 c.c. to 2 c.c. by subcutaneous injection. The action of Thiomerin Sodium is slower than that of the older mercurial diuretics, and may extend over 24 to 36 hours. It is contraindicated in advanced chronic nephritis and acute renal disease.
Pack:	One vial containing 1.4 Gm. Mercaptomerin Sodium and one ampul containing 10 c.c. Water for Injection, U.S.P.
Notes:	The solution is stable at temperatures below 80° F. for 40 days. Where higher temperatures prevail, keep solution refrigerated. Do not use if the solution becomes turbid.

"PROCID" Nasal Drops

Supplier:	Harker Stagg Ltd., London.
Composition:	A stable aqueous solution containing 5% sodium propionate and 0.8% ephedrine hydrochloride.
Indications:	Rhinitis, nasopharyngitis, incipient common cold.
Dosage:	Three drops instilled into each nostril three to five times daily, the head being placed well back. Alternatively, the nose and throat may be sprayed with an atomiser.
Pack:	Bottles of ½ oz. (14 c.c.) with dropper. Bottles of 1 oz. (28 c.c.) without dropper.

PRONUCO

Supplier:	Herts Pharmaceuticals Ltd., London.
Composition:	Palatable powder containing "Pronutrin" brand casein hydrolysate 15%, carbohydrates 78.2%. Each 100 grammes also contains vitamin A 5000 i.u., vitamin B1 2 mg., vitamin B2 4 mg., vitamin D 357 i.u. and calcium pantothenate 3 mg.
Indications:	Malnutrition, protein deficiency conditions, etc.
Dosage:	One or two dessertspoonfuls dissolved in a glass of water and taken three times a day or as often as required.
Pack:	Tins of 8 oz.

GUIDE TO NEW PRESCRIPTION PROPRIETARIES (Continued)

GASTROTABS

Supplier:	Virax Ethicals Pty. Ltd., Melbourne.
Composition:	Each tablet contains aluminium hydroxide gr. 10, phenobarbital gr. ¼, atropine sulphate gr. 1/250.
Indications:	Peptic ulceration, functional dyspepsia, gastric hyperacidity.
Dosage:	One or more tablets as directed.
Pack:	Cartons of 50 tablets.

THYAL

Supplier:	Elliotts & Australian Drug Pty. Ltd., Sydney.
Composition:	Lotion containing per fl. oz. 13/32 gr. ethyl mercurithiosalicylic acid, 2/5 oz. alcohol and 1/5 oz. ether.
Indications:	Acne, etc.
Directions:	Apply affected area morning and night.
Pack:	Bottles of 4 oz.

BECHOLINE and BECHOLINE "D"

Supplier:	Medical Research Pty. Ltd., Sydney.
Composition:	Each fluid ounce contains 7.5 gramme of choline chloride with added B Complex.
Indications:	Cirrhosis of liver, atheroma and arteriosclerosis, intermittent claudication, diabetes mellitus, etc.
Dosage:	Recommended minimum dose: 2 drachms three times a day = 6 grammes of choline daily.
Pack:.	Bottles of 8 and 16 fl. oz.
Notes:	BECHOLINE "D" contains no carbohydrates, and is suitable for diabetic patients.

SEDIVAL

Supplier:	Remedia Laboratories Pty. Ltd., Melbourne.
Composition:	Tablets (chocolate coated) containing Ext. valerian stabil. ½ gr. and Ext. lupulin stabil. ½ gr.
Indications:	Neurasthenia, etc.
Dosage:	2-3 tablets three times a day before or after meals and 3-5 tablets at bedtime if required. Children up to 10 years, half dose.
Pack:	Tablets, bottles of 50 and 500.

OROCILLIN FORT

Supplier:	Sigma Co. Ltd., Melbourne.
Composition:	Oral flavoured tablets, each 200,000 units crystalline potassium penicillin G, buffered with sodium citrate 7½ gr.
Indications:	Treatment of penicillin-sensitive infections.
Dosage:	Initial 100,000-200,000 units, followed by 100,000 every 3-4 hours for as long as necessary.
Storage:	Cool, dry place. Stable for 12 months.
Pack:	Bottles of 10 tablets.

HEPTAMIN

P.B.A. No. 181

Supplier:	Sigma Co. Ltd., Melbourne.
Composition:	Vitamin B12 in sterile normal saline.
Indications:	Pernicious anaemia, macrocytic anaemia of pregnancy, sprue, etc.
Pack:	1 c.c. ampoules, 20 microgrammes, in boxes of 6 ampoules. 1 c.c. ampoules, 100 microgrammes, in boxes of 6 ampoules.

MALIDONE

Supplier:	British Schering Ltd., London.
Composition:	3-allyl-5-methyloxazolidine-2:4-dione.
Indications:	Petit mal.
Dosage:	Petit mal: One or two capsules daily, initially. Majority of patients can be stabilised on a dosage of one capsule three times a day, but dosage may be gradually increased up to five capsules a day. Grand mal where petit mal co-exists: One or two capsules daily in addition to sodium phenytoin and phenobarbitone.
Pack:	Capsules (0.3 gm.), bottles of 100 and 500.

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two compounds, so that the precision of its spectrophotometric determination is rather poor. On the other hand, a number of simple and accurate chemical assays are available for acetyl salicylic acid. Hence, by determining the aspirin concentration independently, we require only two equations based on the phenacetin and caffeine absorption peaks, i.e., at 250 mμ and 273 mμ.

This method is quite standard, and various modifications are described in the literature.[9, 10]

We have found that using special methylated spirits as solvent the absorption of A.P.C. at 273 mμ is 2 per cent. lower than the sum of the absorptions of the compounds measured separately, i.e., the absorption of the three components is not additive under these circumstances. This apparent inhibition introduces an 8 per cent. error in the caffeine determination, and appears, to be due to the presence of the aspirin.

The error is most easily overcome by making a compensating adjustment in the co-efficient of the E_{273} reading. The resulting formulae, given below, then enable the accurate determination of phenacetin and caffeine when the aspirin content is known. The precision of the assay is ± 2 per cent. and it can be completed in about an hour.

Formulae for A.P.C. Spectro Assay:

$$C = \frac{22.6\ E_{273}}{w} - \frac{484\ E_{250}}{w} - 0.1193\ A$$

$$P = \frac{11.37\ E_{250}}{w} - 0.187\ C - 0.0456\ A$$

where A, P, C are respective percentages in the sample,
w = weight of sample which has been dissolved in 100 ml. and then rediluted 1 in 100 using special meths.,
and E_{250} and E_{273} are the absorptions of the final dilution read at 250 mμ and 273 mμ.

Conclusion.

I hope the examples I have given you are sufficient to illustrate the value of the spectrophotometer in assaying pharmaceutical products. Even so, there are many other substances not mentioned in the foregoing which exhibit ultra-violet absorption, e.g., sulphonamides, antibiotics, ascorbic acid and others. I have not referred to them specifically since other methods are quite satisfactory for their determination.

The modern spectophotometer does not replace the other tools of analytical chemistry, but it is clearly a powerful aid to analysis, particularly when used in conjunction with other methods. In the pharmaceutical field, it has already proved of inestimable value for the assay of vitamin A, and such substances as A.P.C. where other assays are cumbersome and prone to considerable experimental error.

Acknowledgements.

I wish to thank the Directors of N.P.L. for permission to read and publish this paper; and also my colleagues in the laboratory, in particular Mr. K. A. Daws, for helping me in its preparation.

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TABLE.
Absorption Maxima for Various Pharmaceutical Compounds.

Compound	Wave-length	$E^{1\%}_{1cm}$	Solvent
Thiamin	246 mμ	406	N/100 HCl
Riboflavin	444 mμ	315	Distilled water
Pyridoxine	290 mμ	424	N/20 HCl
Vitamin B_{12} (anhydrous)	361 mμ	207	Distilled water
Vitamin B_{12} (hydrate)	361 mμ	185	Distilled water
	550 mμ	56.2	Distilled water
Ethylidene dicoumarin (Anticoagulant)	311.5 mμ	697	Chloroform
Phenobarbital	255 mμ	340	N/2 NaOH
Folic acid	283 mμ	526	N/10 NaOH
	365 mμ	187	N/10 NaOH
Isonicotinic acid hydrazide	266 mμ	376	N/10 HCl
Vitamin A acetate	325-8 mμ	1531	Isopropyl alcohol
Vitamin A alcohol	325-8 mμ	1835	Isopropyl alcohol
Vitamin D	265 mμ	474	Special meths. spirits
Aspirin	250 mμ*	40.1	Special meths. spirits
	273 mμ*	62.5	Special meths. spirits
	275 mμ	64.6	Special meths. spirits
Phenacetin	250 mμ	879.3	Special meths. spirits
	273 mμ*	191.9	Special meths. spirits
	275 mμ*	164.6	Special meths. spirits
Caffeine (anhydrous)	250 mμ*	164.5	Special meths. spirits
	273 mμ	486.8	Special meths. spirits
	275 mμ*	476.8	Special meths. spirits

*Not absorption peak.

A RECENT REVIEW OF CHLOROPHYLL

G. T. Peterson, Ph.C., F.P.S. (Vic.), O.I.C. Medical Information and Developmental Division, Sigma Co Ltd., Melbourne, C.1.

Introduction.

This paper is not presented as an original research paper, but as the title indicates, is a recent review of Chlorophyll, mentioning its occurrence in nature; its processed derivatives; its pharmacology; and some interesting aspects of its application in modern therapeutics.

Chlorophyll is well known as the green colouring matter of leaves and green parts of plants.

For commerce its main sources are considered to be nettles, lucerne and spinach. Average yield approximates 4 lb. pure substance per one ton of herbage.

It is obtained by extraction with ether, then alcohol in which the chlorophyll dissolves, leaving a waxy residue.

The varieties available are:—
(a) Oil Soluble—obtained by diluting the purified extract with a fat.
(b) Alcohol Soluble—obtained by dilution with castor oil.
(c) Water Soluble—obtained by action of dilute alkali on the purified extract.

Forms available in commerce:—
(a) Semi-Solid or Soft extract.
(b) Liquid.
(c) Dry granules.

This substance is essential to life (animal as well as plant). It is essential to the plant process known as photosynthesis (a process whereby the green leaves of plants convert CO_2 from the air and water from the earth into complex carbohydrates, and release more oxygen into the atmosphere to sustain life).

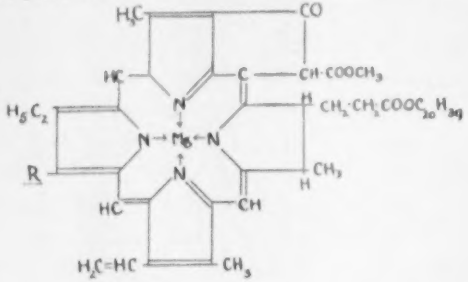
Hence apart from its catalytic action (photosynthesis) in promoting plant life, it is essential to animal life by maintaining the proper proportions of CO_2 and O_2 in the air we breathe. If this function ceased all life would probably perish.

Chlorophyll has been used for years as a harmless colouring matter for soaps, shampoos and similar cosmetic preparations. But recently much attention has been focussed on its properties reputed to be of value in treating certain anaemias, for rapid healing of wounds, and as an effective deodorant (personal and otherwise).

Naturally-occurring Chlorophyll is a mixture. Pure fractions are only isolated with difficulty, which appears to be a major factor in delaying the production of a standard uniform Chlorophyll.

Chemistry.

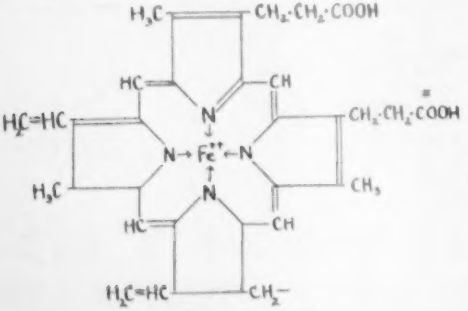
The chemistry of Chlorophyll is very complicated. A provisional formula has been recorded[1].



CHLOROPHYLL

In Chlorophyll "a" R = CH_3
In Chlorophyll "b" R = CHO

By the action of acids the Mg. is replaced by H_2, and a brownish amorphous product termed phaeophytin is obtained. Chemically chlorophyll could thus be considered as magnesium phaeophytin. Both natural chlorophyll and phaeophytin are used medicinally. The chemical structure bears a striking relation to **haem**, the most important difference being that the Mg. atom is replaced by an iron atom[1].



HAEM

Haem combines with the protein globulin to form haemoglobin, a substance responsible for the red colour of blood, and in all probability it is for this reason that chlorophyll has been suggested as an anti-anaemic substance. Chlorophyll, being the so-called life-blood of plants, thus bears a chemical resemblance to blood, as well as a partially comparable physiological function.

The Mg. atom is readily removed by treatment with acids, or is easily displaced by copper, zinc, nickel, etc., and these "copper chlorophylls" or "copper phaeophytins" are stable to acids; but it is of more technical importance that this copper compound has a much brighter colour, and fades much less than the true Mg. chlorophyll. It is desirable that medicinal grades of chlorophyll contain as little copper as possible (hence it is not treated with Cu. to develop colour). Therefore all contact with copper vessels should be avoided.

Latest communication from a large overseas company specialising in chlorophyll products indicates that a recent school of thought has propounded the theory that if any internally-administered chlorophyll is not coppered it will pick up copper from whatever source it can, and therefore might in the human system cause a copper deficiency.

The Mg. atom is not removed by treatment with alkali (likewise Cu. is neither affected). **The water-soluble chlorophyll** comprises either the sodium or potassium salts resulting from alkali saponification. The water-soluble derivatives are obtained by dissolving the residue in some organic solvent and removed by separation.

The solubility of water-soluble chlorophyll is unaffected by the presence or absence of Cu. or Mg. It dissolves to give an alkaline reaction. If treated with acid it produces a flocculent precipitate with a practically colourless supernatant. A precipitate is also obtained with excess alkali.

Liquid or soft extracts of water-soluble chlorophyll contain water and generally glycerol as a preservative to prevent mould growths. Granular or powder forms are quite dry.

It has been shown[2] that chlorophyll as such contains two substances, chlorophyll "a" ($C_{55}H_{72}O_5N_4Mg$.) and chlorophyll "b" ($C_{55}H_{70}O_6N_4Mg$.), and are invariably present in the ratio of 2.9:1.

"a" has melting point 117°-120°C.
"b" has melting point 120°-130°C.

In purified powder form chlorophyll "a" is a bluish colour and chlorophyll "b" is dark green.

Medicinal grades of water-soluble chlorophyll available in this country generally contain only 9-15% pure chlorophylls (chlorophyllins). Overseas firms have succeeded in producing water-soluble chlorophyll, coppered or uncoppered, in purities of 80%-90%. The coppered chlorophylls are stated to have a copper content proportional to about 5% at 60% strength, whilst the uncoppered chlorophylls naturally contain up to 6000 p.p.m. (0.6%) at 60% strength.

Assay[1].—To estimate percentage of chlorophyll, based on the nitrogen test. The nitrogen estimation is carried out by normal Kjeldahl method, and the following formula, based on the structure of the chlorophyll molecule, is used:—

$$\% \text{ chlorophyll} = \% \text{ nitrogen} \times \frac{100}{6.19}$$

To estimate % chlorophyllin in water-soluble chlorophyll.—In the process of saponification, phytol, which represents 1/3 of the molecule, is replaced by Na. or K. To estimate % chlorophyllin, use the same nitrogen method, but the following conversion factor:—

$$\% \text{ chlorophyllin} = \% \text{ nitrogen} \times 10.77.$$

Oil-Soluble Chlorophyll for use in soaps and cosmetics is treated with Cu. to intensify the colour. It is reasonably colour fast and fairly stable with acids. Oil-soluble chlorophyll is soluble in fixed oils and essential oils, but is precipitated by the addition of alcohol.

Pharmacology.

Over 30 years ago chlorophyll was reported to stimulate haemoglobin production, and in conjunction with iron was reported as a successful treatment for anaemias and as a "general tonic"[1]. Claims were also made for its epithelial growth stimulation. It has been found non-toxic, but preparations for local use containing excess of 10%* have been found to cause inflammation[1]. Large doses can be given orally or intravenously without untoward effects. Excessively large doses cause increased bowel activity with softer slightly discoloured stools[2].

Water-soluble chlorophyll is not a bactericide, but appears to be bacteriostatic, but is inactive in the presence of frank pus. Reports indicate that chlorophyll, when used externally as a dusting powder, is not as effective as in a cream. It is a powerful deodorant when used either internally or externally.

The deodorant action of chlorophyll appears to be the result of a chemical reaction. The chlorophyllin (as a free acid) is less stable than its sodium or potassium salts (because it is possibly readily oxidised). Upon ingestion, the acid stomach secretion releases chlorophyllin from the water-soluble chlorophyll (salts). Upon distribution throughout the body this chlorophyllin could chemically reduce the malodorous substances or act as a catalyst for their oxidation. However, it seems more feasible that oxidation would remove odours more quickly than reduction[1].

Our tests have not supported the claims recently put forward that chlorophyll exerts an antihistamine effect.

It has been suggested[1,5] that pure chlorophyll "a" can act as an oxygen carrier, absorbing atmospheric oxygen and parting with it again when the absolute pressure is reduced to a low level. It has not been definitely established that water-soluble chlorophyll derivatives possess this property.

Pharmacy.

The local commercially available medicinal grade of water-soluble chlorophyll offered as a soft extract containing water and glycerol 10% (approx.) generally contains approx. 9% chlorophyllins. This form may be used in preparations intended for either oral administration or local application. For compressed tablets, this form is treated with a specially treated inert absorbent, dried, granulated and tableted.

For the preparation of pharmaceutical creams for topical use, this form is readily miscible with water, and is easily incorporated into an elegant product.

As water-soluble chlorophyll naturally has an alkaline reaction, the cream base into which it is incorporated should not alter this reaction, but because chlorophyll cream will be prescribed for severe burns, ulcers, etc., the base must be bland, soothing and non-irritant to raw surfaces.

To permit the chlorophyll to produce a dry clean granulating wound base, and a condition suitable for the normal repair of the tissues, the final cream should not contain excess oil, as oil-saturated tissues tend to heal slowly, and in some instances develop necrosis. The base should readily release the active ingredient to exert its full therapeutic effect.

We consider the following attributes desirable in chlorophyll creams for topical therapy (as exemplified in Neophyll Cream):—

(a) To contain 4% water-soluble chlorophyll (0.4% chlorophyllin).
(b) pH 8.7.
(c) Non-greasy.
(d) Non-irritant.
(f) Capable of being left undisturbed as a dressing for long periods without drying, caking or causing irritation.
(g) Capable of being easily removed for re-dressing.
(h) Capable of readily releasing chlorophyll for high local concentration, but retaining sufficient to permit prolonged therapy from single dressings.
(i) To be miscible with either aqueous or oily secretions of the skin, permitting intimate contact with the damaged tissues.

(*Accepted as referring to the 9-15% chlorophyllin content material.)

Combined with benzocaine and oxyquinoline, chlorophyll has been used in cases of anorectal surgery.

For tableting, preparation of powders, etc., a granular form is available. This contains approx. 15% chlorophyllins. This form sometimes contains an added inert substance, and its solubility, rate of absorption, etc., should be checked for each proposed therapeutic application.

This granular form of chlorophyll should not be confused with pure crystalline chlorophyll, which consists chiefly of ethyl chlorophyllide, a product of the extraction of green leaves with ethyl alcohol. But, as previously stated, it should be noted that some granular forms contain as much as 80-90% chlorophyllins.

It has been recently announced that a new purified flesh-coloured derivative of the more active chlorophyll compounds is available in America. It is claimed that this form will not stain clothes, and is not noticeable on the skin, and is said to promote cell metabolism and speed the natural healing processes[3].

Early clinical studies were mainly concerned with the oil-soluble variety, but most of the recent work has utilised water-soluble derivatives, and experience has shown that they are as effective as, if not superior to, the oil-soluble variety, with added advantages that they are bland, non-irritating, and free from the objectionable staining properties of the oil-soluble form.

It is interesting to note[4] that a further new variety of chlorophyll has been developed. Upon removal from the plant as a pigment, the chlorophyll is combined with proteins and fats. This is non-toxic, insoluble in water, but soluble in blood plasma, imparting a green colour thereto.

This compound has been found to contain in 1/20 oz. as much of certain vitamins and proteins as are contained in 1 lb. of spinach. Vitamins A, E and K are also present. The hope has been expressed that chlorophyll may aid in overcoming the slowing-down oxidation in body cells, which occurs with advancing age, just as it helps living plants to oxidise foodstuffs.

A 5% solution of commercial spirit soluble chlorophyll in chloroform has been used to break emulsions formed during extraction of alkaloids for alkaloidal assays. The addition of from a few drops to a few mils. was shown by a blank determination to have no effect on the final result[5].

Clinical Applications.

(a) **Dental.**

Healer and Deodorant.

Claims that a chlorophyll toothpaste would control dental caries appears to lack support, but chlorophyll toothpastes have been shown to considerably reduce mouth odours. Rapp (1949)[2] demonstrated that chlorophyll toothpastes lowered the acid count in the mouth, thereby preventing the formation of the bacterial acids associated with tooth decay, and retarding the breakdown of the protein parts of tooth enamel.

Chlorophyll has been reported[14] to have no caustic action on the mucosa, no decalcifying effect on the teeth, and no toxic effect on the organism as a whole. It provides efficient cleansing action, and is acceptable to the patient.

Reports indicate[6] that in U.S.A. chlorophyll dental ointments and toothpastes are available for use in healing and deodorising damaged or infected oral and gingival tissue. It is claimed "they provide the natural and non-toxic biogenic properties of chlorophyll 'a' for use in the treatment of acute and chronic Vincents' infections, pyorrhoea alveolaris, osteomyelitis, dry sockets, post extraction and other oral conditions."

(b) **Veterinary Medicine.**

Healer, Deodorant, Bacteriostat.

J. D. Schaffer (1950)[7] reports that chlorophyll stimulates the haematopoietic processes of the living body, promotes cell metabolism, and is an active biocatalytic agent.

It is non-toxic, and as a wound dressing does not produce scab formation under which anaerobic growth is encouraged.

It is a deodorant. He records seven cases of crushing, scalding, burning, fistulous withers, laceration and puncture with necrosis in horse, cat and dog. All responded well to routine surgical cleansing followed by topical application of chlorophyll preparation. He records a resultant minimum of scar tissue.

(c) Human Medicine.

Promotion of Healing—Externally.

Haughton[8] describes two cases of second and third degree burns treated with topical chlorophyll therapy. After an excellent detailed description he concludes that chlorophyll can be most dramatic in its results, the outstanding feature being the soft pliable nature of the healed surface.

In every case there is a minimum of scar tissue owing to the rapid rate of healing, the healed surface becoming indistinguishable from normal skin.

It is interesting to note his reference that sulphonamide compounds when applied to clean wounds retard the process of repair by as much as ten days. He concludes that chlorophyll completely supersedes sulphonamides as a primary dressing for clean and potentially infected wounds. Its powerful deodorant action is also recorded.

(d) Promotion of Healing—Internally.

Offenkrantz (1950)[9] used a specially-prepared powder containing water-soluble chlorophyll for the treatment of peptic ulcers. He investigated 79 X-ray proved duodenal and gastric ulcers. No restrictions were placed on diet, smoking, alcohol or daily activity during treatment. Five patients had pyloric obstruction, and as was expected, showed no benefit. Of the remaining 74, 60 experienced complete symptomatic relief in from one to three days, and 58 showed complete healing in from two to seven weeks.

(e) Internal Deodorant.

Westcott (1950)[10] demonstrated the effectiveness of orally administered chlorophyll as a body and breath deodorant. It was observed that while treating patients with hypochromic secondary anaemias, the odours of Vitamin B, usually detectable in the urine, were greatly decreased in patients receiving chlorophyllins. This indicated some change taking place in the metabolism of these ordinary odorous compounds.

This led to further investigation in underarm odours, results being obvious within seven hours, and doses of 65-200 mgm. being effective up to 18 hours.

Further tests showed that when one tablet containing 100 mgm. of the extract was taken first thing in the morning, before moisture had a chance to dry on the skin surfaces, the perspiration odour was not detectable in 90% of cases. Satisfactory results were also obtained with patients after eating onions. Further studies showed that this material effectively neutralised obnoxious odours in the mouth from foods, beverages, tobacco and metabolic changes (halitosis). Westcott claims chlorophyllins effectively neutralise odours from perspiration due to physical exercise, nervousness and illness, obnoxious foot odours, menstrual odours, and many urine odours from ingested materials. Chlorophyll tablets have been used as a deodorant in cases of bronchiectasis.

Results of our trials with chlorophyll deodorant tablets for internal use ("Chexode") have not been as extensive, but reports received to date are in general agreement with the above.

(f) External Deodorant.

Grusken (1940)[2] drew attention to the deodorising effect of chlorophyll when applied to the foul-smelling lesions in anaerobic infections; also the tendency for chlorophyll to clear up the odour in cases of ulcerative carcinoma where a great deal of putrefaction is associated with a foul odour. Bowers (1947)[2] used chlorophyll on a group of compound fracture cases with osteomyelitis and widely open wounds which had been draining profusely for months. The odour was sufficient to deprive both the patients and attendants of their appetite.

Chlorophyll immediately removed the odour, and greatly improved the appearance of the wounds, with marked acceleration of wound healing.

Workers under the auspices of the Therapeutic Trials Committee of the Council on Pharmacy and Chemistry of the Amer. Med. Assoc. found chlorophyll to be a consistently effective deodorant when used on foul-smelling wounds. Reports to date indicate that a chlorophyll cream (Neophyll—containing 4% water-soluble chlorophyll) has been successfully used in the treatment of dermatitis of unknown aetiology; restoration of normal elasticity and resilience to fragile skin following a severe burn in a child; restoration of normal healing and suppleness to the skin of hands which continually cracked and bled for no apparent reason; to assist rapid healing in normally slow healing diabetic lesions; deodorisation and general improvement of severe varicose ulcers and the like; showed complete healing with notable absence of scarring following ordinary burns (hot water) and chemical burns (cresol).

Chlorophyll (oil soluble) has been used[16] in suppositories to minimise the foul odours associated with vaginal and rectal disorders.

Truly chlorophyll has been described as one of the key chemicals of nature. The more we study this abundantly-occurring substance, and the numerous avenues whereby it justifies for itself an honoured place in medicine, we realise that vegetable materia medica still retains a reputable place in a world of modern antibiotics and synthetic chemo-therapeutic agents.

Here we see yet another substance to remind us of the wisdom and observance of the ancient writer who, referring to the "tree of life," recorded that "the leaves of the tree were for the healing of nations."

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At the President's reception (l. to r.) Mr. N. C. Manning, Dr. C. E. Eddy and Mr. H. W. Manning.

PRESIDENTIAL ADDRESS—SECTION B, CHEMISTRY

SOME ASPECTS OF THE CHEMISTRY OF MONOCYCLIC TERPENES.

By Professor A. K. MacBeth.

(Abstract.)

This lecture was devoted to an account of some work carried out by the Adelaide School of Organic Chemistry.

It considered alcohols related to some of the carbonyl constituents isolated from essential oils, particularly eucalyptus oils. Full knowledge of the alcohols is an essential preliminary to the search for the compounds in the essential oils themselves. Several such alcohols have already been studied extensively, for example the menthol series. Such a study implies in the first place the determination of the constitution of the carbonyl component from which the alcohols are derived. In the second place, since the alcohols often occur as epimeric pairs, the isolation of the pure isomers, and their stereo-chemical examination is essential. This involves also the study of methods of reduction. In the configuration determination the Auwers-Skita rule is a valuable aid, and in some cases has hitherto been relied on as sole indication of configuration. If possible it is desirable to furnish other proof of the identity of the isomers by the derivation of reference compounds of which the configuration has been established beyond doubt. The following cases were considered so as to illustrate such methods of approach:—

(a) The constitution of cryptone a carbonyl constituent of *E.cneorifolia*. The *cis*- and *trans*- cryptols and dihydrocryptols, and the application of the Auwers-Skita rule.

(b) The constitution of phellandral by degradation and synthetic methods. The preparation of phellandrol.

(c) Piperitone and the *cis*- and *trans*- piperitols. Configuration determinations of the piperitols by their conversion to the related menthols.

(d) Pulegone and *cis*- and *trans*- pulegols.

In the case of 1:2- and 1:4-substituted *cyclo*hexanols the application of the Auwers-Skita rule appears to be warranted; but thermodynamical considerations and some physical considerations indicate that in the case of 1:3-derivatives lower entropy, lower energy content, etc., are associated with the *cis*-isomer—which is a reversal of the behaviour experienced in the case of 1:2- and 1:4- compounds. The Auwers-Skita rule is thus inapplicable in configuration studies of the 1:3-compounds. Absolute chemical methods are therefore essential in such cases, and examples of such studies may be drawn from the 1:3-methyl*cyclo*hexanols, the 1:3-methyl*cyclo*hexylamines, and the 1:3-methyl*cyclo*hexyl carbinols and carboxylic acids.

PRESIDENTIAL ADDRESS—SECTION D, ZOOLOGY AND MEDICINE

By I. M. Mackerras, F.R.A.C.P., Director Queensland Institute of Medical Research.

(Abstract.)

The relationship between zoology and medicine is so close that it may properly be termed a symbiosis. It begins with entry of the medical student into the University, when the primary aim should be to give him a broad biological foundation which will leaven the whole of his future professional outlook. An important subsidiary aim is to introduce him to technical skills which will help him in later life; but teaching applied 'medical zoology' at this stage is strongly deprecated.

It is a defect in the later stages of medical education that an appreciation of the plasticity and variability of biological material is frequently lacking in medical practitioners, with the result that they are often uncritical of their observations, whether of the course of a disease or the results of treatment. Something of the rigid discipline of statistical analysis, which is nowadays part of the normal equipment of the economic biologist, would be useful in general medicine too.

On the other hand, medical workers in the past were greatly impressed with the observable effects of repeated stimulation, with use hypertrophy and, conversely, disuse atrophy, and this led some of them to distinctly Lamarckian views. Most of their theses have vanished, but one remained long unanswerable. There

Mrs. C. E. Marshall (Sydney University Women Graduates' Association) and Miss June Davis attend at the feeding of the wallabies at Taronga Park Zoo.

—Illustration by courtesy of "The Daily Telegraph."

is no doubt that formation of antibody by cells of the lymphoid-macrophage system is an acquired characteristic; and there is no doubt that the capacity to form antibody is transmitted to the descendants of the originally stimulated cells. There has been no recent suggestion that gene-modification is involved, and it has only been with the new knowledge of adaptive enzymes and cytoplasmic inheritance that a logical explanation consistent with modern genetics could be put forward by Burnet and Fenner.

Another field in which there is a close fundamental relationship between zoology and medicine is in the study of infectious disease. Here the words 'epidemiology' and 'ecology' are now synonymous terms; and the medical administrator, dealing with direct practical problems of prevention, is as much concerned with host-parasite relationships, modes of dispersal, population densities, and the factors which influence all three, as is the pure zoologist in his study of animal associations in the field.

Finally, in the restricted specialty of medical zoology, the two branches of knowledge become one. Nobody would now question the practical value of pure natural history studies of the feeding habits and resting places of adult mosquitoes, and there are many other fascinating problems awaiting attention. One which is of particular interest in Queensland is a precise determination of the animal reservoirs of certain infections, and a detailed study of their ecology. Encephalitis and leptospirosis are important examples. It may be hoped that intensive work on these lines will be developed in the near future.

LIST OF OTHER PAPERS READ

Papers read at Section "O" also included the following:—

"The Embryonic Chick Heart for the Testing of Cardiac Glycosides." by J. B. Cowle.

"The Excretion of Digoxin in the Rat." by Miss E. E. Shepheard and S. E. Wright.

"Factors Influencing the Polymerisation of Actin." by S. Zador.

"Some Observations on the Cultivation of Digitalis Species in Australia." by Mrs. D. A. Thorp.

"Preliminary Observations on the Pharmacology of a Glycoside from *Asclepias fruticosa*," by Prof. R. H. Thorp.

"A Chemical Examination of *Asclepias fruticosa*," by T. R. Watson.

"The Use of Paper Chromatography for the Identification of Alkaloids in Different Batches of *Duboisia*," by Miss D. K. Large.

"Furane Derivatives in the Volatile Oil of *Myoporum acuminatum*," by S. E. Wright.

"Some Amino Derivatives of Substituted Chromanes." by D. J. McHugh and S. E. Wright.

"Tolerance Limits in Dispensing." by P. J. Ashelford.

"Safety Measures in the Production of Intravenous Salines." by Prof. R. H. Thorp.

RECEPTION AT MERRYBYN.

Mr. Nigel C. Manning, President of Section "O," shares an aside with Mr. K. A. Cartwright, President of the Pharmaceutical Society of N.S.W.

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Pharmaceutical Education

Discussion by Interstate Representatives Attending Section "O" Meetings, A.N.Z.A.A.S., August, 1952

A meeting of representatives of the various State Pharmaceutical Organisations attending the Sydney meeting of Section "O," A.N.Z.A.A.S., was held in the Board Room, "Science House," on Thursday, August 28, 1952.

Present.—Mr. R. S. V. Martin (Qld.); Professor A. Killen MacBeth, Messrs. K. S. Porter and E. F. Lipsham (South Aust.); Messrs. H. A. Braithwaite, A. W. Callister, A. G. Davis, N. C. Manning, E. E. Nye, J. I. Richards, A. T. S. Sissons, and F. C. Kent (Vic.); Messrs. K. A. Cartwright, A. E. Conolly, E. G. Hall, B. G. Fegent, K. Powell, W. Read and P. E. Cosgrave (N.S.W.).

Chairman.—Mr. H. A. Braithwaite, Honorary Treasurer of the Pharmaceutical Association, occupied the chair, and welcomed the visitors. He said there was much to be gained from discussion of mutual problems and the exchange of information. He trusted that the proceedings would be interesting and profitable.

Mr. Braithwaite said the meeting was honoured by having the Angas Professor of Chemistry of the University of Adelaide (Professor A. Killen MacBeth, C.M.G.) present at this informal discussion to give information relating to pharmaceutical education in South Australia.

Pharmaceutical Education in South Australia.

Professor MacBeth said he had been caught up in the wheels of pharmaceutical education in his own State when he arrived in Australia in 1928. In South Australia arrangements had then been made for pharmaceutical students to undertake a new series of courses at the University of Adelaide. (Professor MacBeth is Chairman of the Board of Pharmaceutical Studies.)

At the time of the change-over this had been something in the nature of a bombshell for the Pharmacy Board, but a number of friendly discussions brought about an amendment of the Pharmacy Act.

In South Australia a Diploma Course at the University for pharmaceutical students had therefore been in existence since 1933. This carried the title "Associate of the University of Adelaide" (A.U.A.).

When the Diploma Course was established the entrance qualification was altered. It became four subjects at the Leaving Examination, which at that time was the Matriculation standard. No specified subjects were laid down, but the old Preliminary Examination of the Pharmacy Board disappeared.

When the new course was being developed Mr. Lipsham and Mr. O. H. Walter, a former Secretary of the Pharmaceutical Society, had been of very great help to him.

When he looked round he was of the opinion that they had done a little better in the field of Pharmaceutical education in South Australia than had been done previous to 1928.

Professor MacBeth said that recently in South Australia they had been thinking the course as a whole might be improved still further. He favoured a continuance of the present system of a four years part-time course.

What they aimed at doing this next year was to have the pharmacy students come to the University for full-time studies three days a week in their first year, and full-time for certain days in the second, third and fourth years. They thought this would be of advantage to the student.

The schedule of courses would be revised and this would involve a considerable amount of re-adjustment. All students would do practical work in the pharmacies concurrently with their studies. They might ultimately be able to devise a B.Sc. Degree course.

During a recent trip overseas Professor MacBeth said he had talked with pharmaceutical education authorities in Dublin, Northern Ireland and Great Britain.

In Northern Ireland they had had a full-time degree course for some years, also a course something like the South Australian Diploma Course. Very few students did this B.Sc. course, the majority doing the other course. Practically everybody who did the degree passed on from pharmacy to take positions as works chemists in manufacturing establishments, etc. So far as pharmacy was concerned they were lost. In Northern Ireland he found the authorities were very adverse to having a full-time system for retail pharmacists.

At Bloomsbury Square the Pharmaceutical Society firmly believed in the full-time courses.

In South Australia they were very strongly of the opinion that the best pharmaceutical chemist could be produced by having concurrent academic courses and practice in the pharmacy.

Numbers of entrants to the University of Adelaide were growing steadily, and, to solve the problem of accommodation, consideration was being given to a proposal that Diploma Courses of the University should be done at other institutions. Next door to the University was the School of Mines. If the Diploma Courses were sent outside of the University it was very likely that pharmaceutical education would go over to the School of Mines if no development took place.

Professor MacBeth said that in South Australia Science Degrees were provided in Forestry and Agriculture. It might be that similar provision would in future be made for pharmacy. Work in the First Year might include, say, Chemistry, Physics, a branch of Mathematics, and perhaps a subject such as Pharmacy I.

The Second Year might include Organic Chemistry, Pharmacy Second Year subjects, and possibly Biology.

The Third Year could include two full Third Year subjects, e.g., Materia Medica, and Pharmacy, into which would be incorporated Practical Dispensing, and, say, some Pharmacology.

He thought they could devise a B.Sc. course with very special bias on the pharmacy side. This could be spread over four years as at present, and there could be close contact with the pharmacy (or applied laboratory). Such a system could produce very good pharmacists. Personally he was very much more in favour of this continuous contact with practical work than three years completely full-time studies.

Dealing with proposals made from time to time for uniformity of educational systems between States, Professor MacBeth said he thought it was impossible to achieve 100 per cent. success in this direction with the differing conditions in the different States, but he thought they should try to get as close to the ideal as they could.

Discussion on Professor MacBeth's Remarks.

A member asked if it was now necessary for apprentices to produce evidence of practical work done in the pharmacy.

Professor MacBeth said they must keep a record of galenicals prepared. The Pharmacy Board Inspectors looked after that side.

Mr. Lipsham said they had a very efficient system of supervision, which would be extended as the course expanded.

A member asked if that supervision would still be continued under the new proposals. Mr. Lipsham: Yes.

Professor MacBeth. The work in the University subject would not be complete unless practical work was approved.

Mr. Hall said that supervision of that kind would be a big job in a larger State such as New South Wales.

Professor MacBeth said he would have thought that with the larger numbers more finance would be available to employ inspectors.

Mr. Hall said that in New South Wales it was laid down that certain exercises had to be carried out in the pharmacy. Last year during the examination following his own First Year Lectures, he purposely set a question calling on students to describe a maceration, percolation, decoction or infusion which had been prepared.

He was amazed at the lack of information which the students had of such exercises. Many replied that they had never carried out these operations. He felt apprentices would not get the training unless the provisions of the regulations were absolutely policed. In his opinion a number of chemists were not capable of thorough teaching and many lacked time.

Mr. Conolly said that one of the worst features, in New South Wales, was the exploitation of immigrants who were taken as apprentices. He quoted examples to illustrate this point.

Mr. Braithwaite said the meeting had not been discussing the weaknesses of apprenticeship. In discussions such as these he thought they should arrive at a conclusion as to whether an effective concurrent apprenticeship was desirable, and, if it were desirable, could it be made effective.

Mr. Cartwright said two difficulties had to be overcome:—

(1) A lot of men, although very good chemists, were not competent teachers;
(2) In many places there was not sufficient time to instruct.

Mr. Braithwaite said if the conclusion was reached that concurrent apprenticeship was desirable it would be necessary to consider approval of pharmacies. Personally he was much opposed to discarding progressive application of teaching given in the University and College to practical work in the pharmacy.

The New South Wales Course.

The Chairman at this stage asked New South Wales representatives if they would explain, for the information of Interstate visitors, the changes which were taking place in New South Wales.

Mr. Cartwright said it was unfortunate that Professor Thorp was not able to be present. Mr. Hall, however, would be able to give the meeting an outline.

Mr. Hall said that for a period extending over some years they had discussed this question of apprenticeship. They were not happy with the idea of concurrent apprenticeship and studies.

The new system provided for a three years full-time course taking in the basic science subjects in the first year. The idea was that a student could, at the conclusion of the first year, if he so desired, change from his pharmacy course and proceed to a B.Sc. in some other course. They were, however, hoping that they would choose to stay in pharmacy.

RECEPTION AT MERRYBYN.

In foreground (left to right): Mrs. H. E. R. Barker, Mr. H. E. R. Barker and Prof. R. H. Thorp.

In the next two years the work would be broken up to include general pharmaceutics as they now knew them. Subjects such as Pharmacology, Physiology, Bacteriology, would be brought in. At the end of the third year students would study for a Final Examination. They would get a Diploma or something of that nature.

Mr. Hall said there would be two courses open — at the end of the three years to go into an approved pharmacy, where they would spend 12 months under the aegis of a qualified pharmaceutical chemist. They would not be registered until that was done. During that time they contended that the student, having all his examination problems behind him, would be more fit to apply himself to the business side of pharmacy.

Mr. Hall said it was his intention that the Council of the Pharmaceutical Society of New South Wales would then establish a voluntary course extending over 12 months to include a complete business training. The graduates from the University must be taught how to buy, to know what books of account, a cash register, etc., meant. It was necessary also for them to get an understanding of the "psychology of the shop."

For students who were not interested in going into retail pharmacy, Mr. Hall said another course would be open. They could continue at the University for a further year and specialise in Bacteriology or Pharmacology.

From the observations that had been made at the University they felt there would be only a small minority doing that. At the end of 12 months, provided the reports were satisfactory, the students would be registered in the same way that a doctor is registered after 12 months' hospital work.

Mr. Hall said that present students being trained under the current system would carry on until they were finished with their course, and that other type students would gradually be brought in.

Professor MacBeth asked if a five-year course was not entailed. Mr. Hall: No. Three years at the University; one year in the pharmacy. The three year Degree men cannot be registered until they have done a year of practice, the specialised courses can be done at night.

Mr. Hall said that it had been suggested that there was a possibility that if a man decided to do this further 12 months at the University and elected to work in a laboratory, he would turn round and go into pharmacy, but would suffer from lack of knowledge and experience. In the United Kingdom they could get their practice in either a retail pharmacy or laboratory and thus qualify for registration.

Mr. Davis asked what would be the position if a person, after completing the course, could not find a pharmacy in which to gain practical experience.

Mr. Hall said this problem had not been considered because the question asked was not how could they get a pharmacy, but how soon could these people be made available. They did not anticipate any difficulty at all because many enquiries had been received from country districts.

Mr. Cosgrave said there was no question at all about approved pharmacies. This did not appear in the Act.

Mr. Davis asked what supervision there would be to ensure that students had practical experience in dispensing doctor's prescriptions.

Mr. Hall said that the question of the details of the practical course had not been worked out. They were working for the implementation of regulations, and this point had not been overlooked.

Professor MacBeth said that in the first three years under the new system a pharmacy student would not be earning any money. Under the South Australian system he would be earning from the outset.

Mr. Hall said it was a sorry point with him that pharmacy was regarded as a poor man's profession.

Professor MacBeth said that he felt many young people would be lost to pharmacy as the medical course would not take much longer.

Mr. Hall said that the medical course was six years as against four in pharmacy.

Mr. Cosgrave pointed out that the provisions of the Act in relation to apprenticeship were not in operation as yet and would not be implemented until proclaimed.

At this stage the Chairman, Mr. H. A. Braithwaite, stated that Professor MacBeth had to leave to keep another appointment at the University.

He wished to thank the Professor for his courtesy in coming to the meeting and giving those assembled the benefit of his experience and views on the subject of pharmaceutical education. He was sure that all had benefited, and would therefore take back to their respective States something which would be of value.

On resumption of the discussion Mr. Porter asked what control would the authorities have during the year of practical experience. He said one man, after doing his University course and examinations, might go to a pharmacy where he would get a lot of dispensing; another could go to a pharmacy where he would do practically none. Was there going to be any control of the actual practical experience? Would the Pharmacy Board have control?

Mr. Cosgrave said that the Act merely stated that a person must serve 12 months. They believed that graduates would not be employed unless they were engaged on productive work. It would be possible for a person to serve a number of short periods in various pharmacies, and these periods would be counted.

Mr. Sissons said he thought they were all concerned with the same problems. They were really looking for information which would be mutually helpful. Unless in the fourth year a man was going to get real practical experience he would be handicapped. He thought that his remuneration would not be less than £12 per week. What provision he asked could be made to prevent exploitation? It seemed to him likely that these people would be just as much subject to exploitation as the present apprentices.

Mr. Read said that all students would get a full training at the University.

Mr. Lipsham: "That is quite impossible."

Mr. Read: "I don't think so. My idea is that the practical training he will get will be on the business side."

Mr. Sissons said he assumed that the business course to be provided would be given by highly-trained people and would be costly.

Mr. Hall said that would be so. At the present time it was his own personal idea. Some years ago in Sydney a course similar to what he had in mind had been conducted by the Pharmacy Board of New South Wales and had been most successful. He thought the Pharmaceutical Society could easily institute an adequate course.

Mr. Sissons said it would have to be on the same level as lectures given at the University, at a standard to which the students were accustomed. Mr. Hall: "Undoubtedly."

Mr. Davis: "Will an accountancy course be of value?" Mr. Hall: "We are intending to call this a Business Practice Course."

The Chairman: "There appear to me to be two weaknesses — attendances will be voluntary and at night. This might be a problem unless there is some good selling done."

Mr. Hall: "Selling will not be needed. I know of many apprentices who have gone voluntarily to business colleges to get the information."

Mr. Cosgrave: "So far as the Government is concerned the course will be a compulsory course. Teacher will be appointed in business subjects."

Mr. Sissons: "Suppose we take a man who has done a B.Sc. course and has been employed as a works chemist. Then he thinks he would like to change over to business. On what conditions can he change over?"

Mr. Cosgrave: "He can buy a pharmacy under New South Wales law, but he is not a registered pharmacist."

Mr. Sissons: "You would not want that position rectified?"

Mr. Cosgrave: "Yes, but it cannot be retrospective."

Mr. Richards: "A man could go in as a works chemist. He could buy a pharmacy, put in a manager and nominally be under the tutelage of that manager, eventually becoming the actual legal owner himself."

Mr. Hall said one of the things that was worrying N.S.W. pharmacists most at the present time was unqualified ownership, and he gave a number of instances where persons conducting other types of businesses had established pharmacies and put in registered managers. Obviously they were attracted by P.B.A. business.

Mr. Porter said he would like to go back to the question of practical training, which he considered a most important factor. He thought there had been some expression of opinion as to whether or not such training could be controlled. So far as they knew there had been no system set down by the Board in New South Wales under the new set-up.

Mr. Read had made the point that they could assume responsibility within the teaching institution just as they could within the pharmacy. He did not agree.

Mr. Lipsham enquired if there had been any definite effort made to implement under the present Act a gradual introduction of the full scheme.

Mr. Hall said there had been a combined meeting of the Society and Guild with Mr. Cosgrave, when something of the nature had been discussed.

Mr. Cosgrave said the present Act was still current. Apprenticeships could continue until such time as the section of the Act abolishing apprenticeships was proclaimed.

Mr. Lipsham: Have you considered modifying the present course in progressive stages?

Mr. Hall: Definitely not.

Mr. Richards said he thought the weakness in all of the States at the present time was the broken time which students served in both College and pharmacy. New South Wales seemed to have overcome that. He was not surprised at some of the answers Mr. Hall had received to his examination questions.

It seemed to him that exploitation of apprentices could be countered by some form of approval of pharmacies for taking apprentices.

Report by Queensland.

The Chairman invited Mr. Martin to outline the proposed scheme in Queensland.

Mr. Martin said the problem in Queensland was largely geographical. There was only one teaching institution in a vast State, and that teaching institution was in the south-east corner. Seventy per cent. of students were training as country apprentices and only 30 per cent. in the metropolitan area.

Mr. Martin then presented the following summary for the information of the meeting:—

Entrance Standard.—Matriculation Standard. This standard brings to tertiary level, thus entitling student to Commonwealth subsidy.

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Left to right: Mrs. S. E. Wright, Mr. S. E. Wright, Mrs. A. G. Davis and Miss Davis.

Length of Apprenticeship.—Three years' concurrent apprenticeship and final year at approved Teaching Institution. Country students to come to Teaching Institution full time for last three months of third year apprenticeship to acquire working knowledge of practical subjects.

Scheme of Studies.—Each academic year is approximately 40 weeks.

First Year.—Eleven hours per week at the teaching institution as 1½ complete days for city apprentices. Correspondence instruction for country students.

Inorganic and Physical Chemistry (Theory and Practical): 6 hours per week.

Pharmaceutics I (Theory and Practical): 4 hours per week.

Physics: 1 hour per week.

Theory and Practical examinations in these subjects for city students — country students do theory papers only (practical sections at end of Third Year).

A prescribed number of selected galenicals and prescription types to be made in the pharmacy.

Second Year.—Eleven hours per week at the teaching institution as 1½ complete days for city apprentices. Correspondence instruction for country students.

Organic Chemistry I (Theory and Practical): 3 hours per week.

Pharmaceutics II (Theory and Practical): 4 hours per week.

Biology (Botany and Zoology—Theory and Practical): 3 hours per week.

Business Principles: 1 hour per week.

First Aid: Course to be arranged (possibly by Ph. Society: In evenings.

Theory and Practical Examinations in these subjects for city students — country students do theory papers only (practical sections at end of Third Year).

A prescribed number of selected galenicals and prescription types to be made in the pharmacy.

Third Year.—Six hours per week as one complete day — rest of time to be spent in the pharmacy. Correspondence instruction for country apprentices.

Pharmaceutics III, including Forensic Pharmacy: 3 hours per week.

Organic Chemistry II (Theory and Practical): 3 hours per week.

Theory and Practical Examinations in those subjects for all students. A prescribed number of selected galenicals and prescription types to be made in the pharmacy.

Country apprentices to attend the teaching institution full time during the latter half of this year for instruction on subjects or parts of subjects that cannot be given by correspondence, especially practical aspects of chemistry, biology, etc. The country students would do the practical sections of their various subjects earlier, and Third Year subjects at the November Examinations of the teaching institution.

Fourth Year.—Twenty hours per week. A full-time year at the teaching institution.

Pharmaceutical Chemistry (Theory 2 hours and Practical 3 hours): 5 hours per week.

Practical Pharmacy (Galenicals 3 hours, Dispensing 3 hours): 6 hours per week.

Pharmacognosy, 2 hours per week for 20 weeks: 2 hours per week.

Pharmaceutics IV Physiology and Pharmacology Bacteriology, including Sterile Dispensing (Theory and Practical): 3 hours per week.

Pharmacy Theory: 2 hours per week.

Examinations.—It is realised that these come within the domestic sphere. In Queensland an alteration could only be made by altering the Pharmacy Act.

The Tripartite Committee has considered various recommendations which have been submitted to it and the members of the Committee are in favour that the Intermediate Examination be abolished and replaced by annual examinations held in November of each academic year, to be followed by supplementary examinations in the following February. Failure to satisfy any annual examination would result in the year having to be repeated.

Qualifying Examination. — Conducted by the Pharmacy Board. Recommended that the Final be held in November, and a supplementary in February.

Subjects. — Pharmaceutical Chemistry (Theory and Practical).

Galenicals.

Dispensing.

Pharmacognosy.

Physiology and Pharmacology.

Bacteriology, including Sterile Dispensing (Theory and Practical).

Pharmacy Theory, including Prescription Reading and the recognition of galenicals and pharmaceutical chemicals.

Further Recommendations by the Committee. — To prevent overloading of course, limit ancillary subjects, e.g., Pharmacology, Bacteriology and Physiology. Same to be taken only as required in interpretation of B.P. Further study if any to be post graduate.

Other points the Committee considers should be taken into consideration is the qualification of students to enter upon a pharmacy course — some students may be unsuited. In the early stages of the course, the difference between the Junior teaching to the students' freedom of the Pharmacy College.

Mr. Braithwaite asked Mr. Martin if he had any idea how long it would take to implement the lay-out.

Mr. Martin replied that he thought it might take two or three years.

Mr. Braithwaite suggested that Queensland authorities might consider the possibility of introducing a pre-science year to be done outside of the teaching college or University, as was done now with the medical course in Victoria. This might be an answer if their efforts to obtain approval for a higher entrance standard were not realised.

Mr. Callister asked if Mr. Martin envisaged that training of pharmaceutical students might be shifted to the University. Mr. Martin replied that he thought this was their aim, but entrance to the University could be gained only by Matriculation.

Discussion on Pre-requisite Subjects.—Mr. Sissons expressed the opinion that it was necessary to bring the number of pre-requisite subjects for entry to the course to a minimum. English was always required, but after that the difficulty arose. After English he would place Mathematics and after Mathematics Physics and then Chemistry.

Students in Victoria were required to do a specified subject at the Junior Examination before proceeding to the Leaving and to pass at the Leaving in it before proceeding to Matriculation. Many students had not made up their minds what course they wished to pursue when they were at the Junior stage.

Mr. Cartwright said that in the Society's First Year Lectures students required to know something about Chemistry and Physics.

Mr. Powell said that the University and the Pharmacy Board did not pre-suppose that these subjects had been taken before entry upon the course.

Mr. Sissons said any student with a sound general education had been taught to learn.

Mr. Fegent said if they were going to have concurrent apprenticeship the apprentice must have some knowledge of chemistry.

Mr. Hall asked if under the Queensland proposals a student was still regarded as an apprentice in the fourth year.

Mr. Martin said that the apprenticeship would con-

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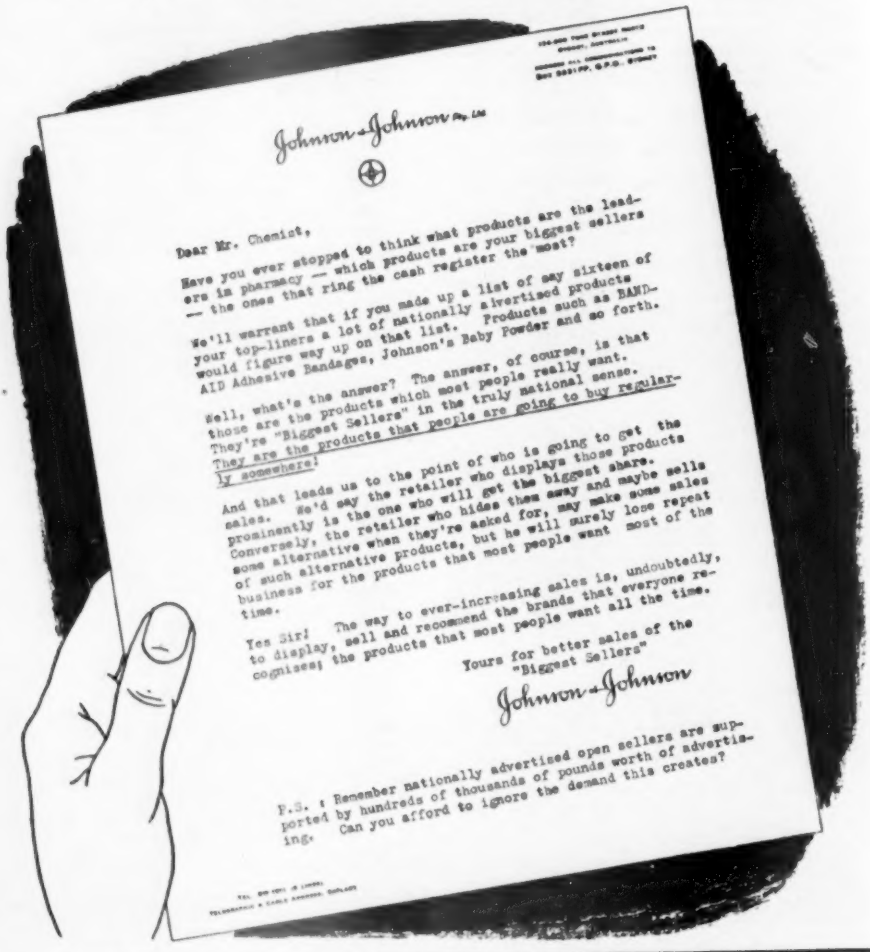

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tinue at three years as at present. Students who transferred for the Third Year Course after 2½ years in the country would still be apprenticed for the remaining six months.

Victorian Proposals.

At the request of the Chairman Mr. Sissons outlined recent Victorian Proposals. He said that from discussions which had taken place over the last two years it was apparent that the Victorian bodies believed they should continue with some form of concurrent teaching and shop practice.

They were anxious to re-arrange the distribution of time so that it would go more into "blocks of time" according to ideas Mr. Lipsham had developed. If that could be achieved it would probably meet the objection raised by Mr. Richards at this meeting. The problem was very largely one of laboratory accommodation. They would like to have the students at the College in "day units" rather than broken time. The same would apply to the pharmacies.

They were exploring the possibility of applying a "sandwich system" having a "block period" of months at the teaching institution full-time, following at a pharmacy for a period full-time. Difficulties undoubtedly would arise over the questions of vacations and how to spread staff.

In Victoria they had a very strong feeling that the sooner you could bring a student to the subject of Pharmaceutics the better, and to this end had introduced the subject of Practical Pharmaceutics in the First Year. Pharmaceutics had been greatly stepped up in the curriculum and was taken as a full subject in each of the four years. He thought they had established the fact that a lot of Pharmaceutics could be taught concurrently with Chemistry and Physics.

Developing this thought Mr. Sissons expressed the opinion that by introducing the students early in their career to the practical subject in the course they might avoid loss of some of the better students who had not had the contact with these subjects and turned their eyes to other courses. Without an introduction to Pharmaceutics students at the end of the First Year would know very little about pharmacy and might be lured to other faculties.

Mr. Braithwaite referred to interruption of studies by National Service Training and asked that representatives of the various States communicate with the General Secretary, explaining what steps had been taken in their respective States to meet the position.

He said also in Victoria that the Factories and Shops Act permitted only one apprentice to one pharmacy. The desirability of changing this provision had been considered. Mr. Sissons said there was no logical reason for introducing that particular provision. It was probably done for economical reasons when pharmacy was over-crowded.

Mr. Cosgrave said that in New South Wales one apprentice was permitted for each qualified chemist in the shop.

Mr. Lipsham said pharmacy should not be covered by an Industrial Award under any circumstances.

Mr. Read said Mr. Sissons' suggestion regarding early teaching of practical subjects had not been overlooked in New South Wales. The subjects and the type of subjects had been under discussion. One suggestion was that the subject of Pharmaceutics should run right through the course, e.g., Pharmaceutics 1, Pharmaceutics 2, Pharmaceutics 3.

Mr. Sissons said it appeared to him that any course adopted if carried out ideally was a full-time training course. **The time served in the pharmacy must be regarded as part of the training.** There were, he thought, some advantages in full-time training not being entirely academic. If they decided that 24 teaching weeks constituted a First Year they might take apprentices and give them an initial 24 weeks' full-time academic work, then let them go out for the next 27 weeks to a pharmacy; meantime the Second Year student might come in for 6½ months into the teaching institution, thus staggering the work and attendance of apprentices in the pharmacies.

Mr. Callister said the point at issue seemed to be the desirability or otherwise of maintaining concurrent shop practice and academic studies. It had been said that apprentices could be taught all they should know in the teaching institution. He did not agree because experience had indicated that, although you could teach an apprentice the fundamentals and require him to make up a prescription once or twice only practice gave him the facility necessary for efficiency. The student needed continuous practice in large quantities. That he felt might not be obtained in the one year of controlled practice provided in the New South Wales Act.

Adjournment.

After lunch discussion was resumed at 2.45 p.m.

Mr. Manning asked a question regarding the ancillary subjects referred to by Mr. Martin in his report.

Mr. Martin said the subjects were Pharmacology, Bacteriology and Physiology. Subjects such as Salesmanship, Psychology and Social Biology might be taken as post-graduate subjects.

Mr. Hall asked who was the overall controlling authority.

Mr. Martin said the Board administered the Act and was the examining body. Under the new proposals the Board would leave the Intermediate Examination to the teaching institution.

Mr. Sissons suggested that they should avoid describing one section of their training as "retail pharmacy." He suggested "general pharmacy" as a better term, which could be used alongside of "hospital pharmacy," "manufacturing pharmacy," etc. He thought a survey made of the manufacturing field would disclose that there was a very large number of people holding senior technical positions who hold the general qualification.

Mr. Hall said Mr. Sissons' comments indicated his complete agreement with the N.S.W. system. (Laughter)

Mr. Lipsham asked if Mr. Hall would quote his authority for saying there would be a Diploma status for students who had completed the N.S.W. course.

Mr. Hall said this had been stated in discussions which had taken place.

Mr. Lipsham said that Professor Thorp had stated specifically that there would be a Degree, not a Diploma.

Mr. Manning said one would naturally contemplate a Degree at the end of a three-year full-time University course.

Mr. Powell said that was the way he had always understood it — that it would be a Degree course.

Mr. Hall said his interpretation of the Act was that there would be two sections — A Diploma at the end of three years, and a Degree for those who did the extra year.

Mr. Braithwaite asked if it could not be interpreted that at the end of three years there would be a Degree in Pharmacy which, with a further year's study, would lead to a Science Degree in addition.

Mr. Hall said he did not think the terms of the Act had been interpreted sufficiently.

Mr. Powell said the provisions of the Bill had been very badly thought out. It was an ill-considered Bill, and pharmaceutical organisations had not had the opportunity of considering it before it was enacted.

Mr. Manning said it might also be a domestic matter within the University, because finalisation of the matter might depend upon appointment of a Professor in

Pharmacy. He presumed their colleagues in New South Wales would keep well in mind the necessity for ensuring that after three years full-time study pharmacy students were not done out of a Degree.

Mr. Lipsham said the Act provided that there would be "a graded course." That could mean practically anything within the scope of the Act. Mr. Hall said they were going to provide a qualification in general pharmacy. He (Mr. Lipsham) said he was sure they could not do that by teaching within the University only. Within the regulations that could be made under the Act provision could be made for practical experience. If the graded course were extended to take in practical training during the four years of academic study, and then later they took the year of practical experience, the course would, in his mind, be a considerable improvement.

Mr. Hall said consideration had been given to requiring practical experience during the long vacations —approximately three to four months.

Mr. Lipsham: "Get one unit of practical experience into your course and then you will be talking sense. You have ample power to get this practical experience; also to control the practical experience in the year afterwards. Do not get the idea you are going to turn out a general practitioner if teaching is confined to the University of Sydney. You cannot do it inside an institution."

Mr. Davis said he did not like the N.S.W. idea very much. He was a firm believer in the concurrent system. The ideal allocation of time between the teaching institution and the pharmacy had not been worked out. Their present systems were not perfect. There was a lot to be said for the "block system" referred to by Mr. Sissons. Some speakers had said that the master chemist could not teach the apprentice to do the job. It was the experience that counted. They had very competent men to teach in the College and their teaching was applied in the pharmacy. That was where the student got his experience, by repetition of the work done in the College. Broken time was one of the biggest difficulties at the present time.

Correlation of Work in Teaching Institution and Pharmacy.—At the request of the Chairman, Mr. Manning outlined a report made by Mr. Callister and himself to the Council of the Victorian College with the object of correlating the work done within the College of Pharmacy and the pharmacies. Masters were to be notified of the exercises being undertaken and students would be required to undertake exercises in the pharmacy according to schedule corresponding with instruction at the College. Copies of the report and schedules were tabled for the information of those present.

Mr. Richards again emphasised his point that consideration should be given to the type of pharmacy in which a student was permitted to take an apprenticeship.

Mr. Braithwaite said that in Victoria their new Act gave them power to make much more effective regulations in this respect than they had previously.

Mr. Richards said that the conditions of concurrent apprenticeship might be so onerous that chemists would not take apprentices.

Mr. Porter replied that a good master should have some respect for his own profession and the destiny of that profession. The training of apprentices was an important obligation.

Mr. Richards: "You cannot make people good by legislation."

Mr. Sissons: "You can readily make bad men by over-legislation or contentious legislation."

Conclusion: The Chairman said that there would undoubtedly be a discussion on Pharmaceutical Education at the Sydney Conference in August next year. The matter was of vital importance. It had been further suggested that there should be a further conference among representatives of all States towards the end of the present year so as to shape matters for presentation at the August meeting. He would like the members present to take to their respective bodies a definite invitation to be represented. He thought that any cost to the State organisations would be well repaid.

N.S.W. representatives had also asked that the question of a code of ethics be discussed.

Those present agreed with the suggestion for holding a further meeting, and it was suggested that this be held in Adelaide early in 1953. If this were done it was hoped that Western Australia would be represented.

It was further suggested that a period be devoted to discussion of the subject immediately prior to the August Conference.

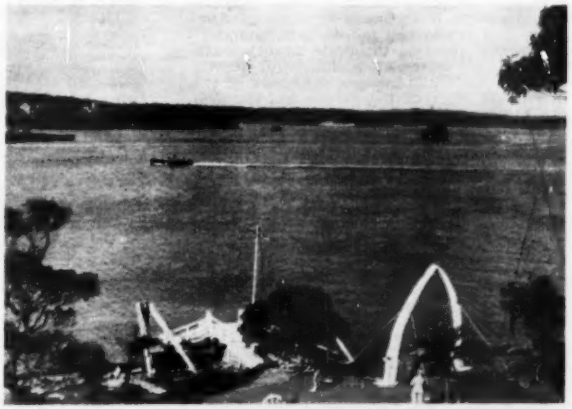
The Chairman said he thought it might be wise for the Federal Council of Societies or the Association to produce something in the nature of a model for pharmaceutical education throughout Australia. Basic principles could at least be set down. This was a matter which warranted consideration. He commended to all present serious consideration of the affirmations produced at the meeting of the South Australian and Victorian representatives, held in Melbourne. These had been circulated to all States with a request for comment.

Mr. Lipsham said he would like recorded a request that all States send back reports on the points mentioned by the Chairman. The Secretary was instructed to send copies of the S.A./Vic. affirmations to all States again.

Messrs. Porter and Lipsham, on behalf of the South Australian organisation, extended invitation to all States to send representatives to Adelaide in January, 1953.

The meeting concluded with an expression of thanks from the Chair to the N.S.W. representatives for arranging the meeting and for their hospitality to the Interstate visitors during the Congress.

Mr. Cartwright responded on behalf of the N.S.W. Society, and after a vote of thanks to the Chairman had been passed the meeting terminated.



View of Sydney Harbour from the Kirribilli Yacht Squadron.

Successful Tour of Queensland Key Guild Districts

Federal President's Tribute to Members' Loyalty

By Keith Attiwill.

Mr. Eric Scott, Federal President of the Guild, who made an official tour of Queensland at the end of August, wrote to the Queensland State Branch Committee expressing high praise for the loyalty and enthusiasm of Guild members in Northern Queensland.

Mr. Scott was accompanied on his tour by Mr. W. A. Lenehan, the State President, and Mr. Keith Attiwill, Federal Director of Pharmaceutical Public Relations.

"On completion of the tour of Guild key districts organised by Miss Brighouse, State Guild Secretary, in conjunction with your Committee," wrote Mr. Scott to Mr. Lenehan, "might I on behalf of the Federal Council and Public Relations Secretariat thank you very sincerely for the reception that we have received everywhere. It was really an inspiration to Mr. Attiwill and myself to see the elevation of the Guild policy as practised by your northern zones."

Annual Meeting in Brisbane.

A rousing address was given by Mr. Scott to the annual meeting of the Queensland Branch of the Guild at the Brisbane Town Hall on August 19. The Federal President reviewed negotiations between the Federal Council and the Commonwealth Minister for Health (Sir Earle Page) in recent months. Mr. Scott gave a full explanation of matters discussed at these negotiations, embracing the following subjects:—

Automatic adjustment of P.B.A. dispensing fees upward delayed pending the results of examination of P.B.A. and private prescriptions and the incidence obtained; better system of notice by Canberra of removal of items and alteration of prices in pharmaceutical benefits list; stocking of doctors' bags with emergency supplies of pharmaceutical benefits; ceiling prices; acceptance by the Minister of the principle of a change from the averaging to a pre-pricing scheme; taxation of friendly societies; and the giving of statutory powers and protection to Guild members of the pharmaceutical benefits committees.

Members who had been in doubt about some of these matters expressed complete satisfaction with Mr. Scott's explanations, and enthusiastically applauded his statement that the Guild's efforts to maintain a satisfactory agreement with the Government on the health service would succeed only if there were unity throughout Australia and confidence in the negotiators.

After the meeting the State Branch Committee were hosts at a delightful supper party at the Guild rooms. Members of the Committee received the guests, and the supper arrangements were supervised by Miss Brighouse (the State Guild Secretary) and members of the Women Pharmacists' Association of Queensland.

Northern Queensland Itinerary.

The tour which followed was described by Mr. Scott in press interviews as a "fact-finding mission to gather latest information about the attitude of the Queensland chemists and general public to the pharmaceutical benefits scheme."

Leaving Brisbane at 6 a.m. by plane for Rockhampton, Messrs. Scott, Lenehan and Attiwill were met on arrival at the airport by Mr. H. P. Fitzpatrick, Secretary of the Rockhampton Guild Zone, and were driven to the Criterion Hotel. Later they were met by Mr. J. S. Gordon, the chairman of the zone, and after dinner at the Criterion Hotel, which was attended by most of the members of the zone as guests of the Queensland State Branch Committee, the visitors addressed a large gathering of zone members. Mr. Lenehan opened the proceedings by expressing the pleasure of the Queensland Branch that circumstances made it possible for him and the Federal visitors to make the tour of Northern Queensland. Mr. Lenehan gave a full review of the Guild activities, and explained the highlights of the annual report presented to the annual meeting.

Mr. Scott, in following, said that it was five years since any Federal or State Guild officials had gone north from Brisbane, and he was looking forward with pleasure to personal discussions of problems.

Mr. Scott then dealt with the various topics on which he had spoken at the Brisbane annual meeting. He said that he hoped that as a result of his investigations and first-hand discussions with Guild members about their problems, he would be in a position to present to the Federal Council at its meeting in Melbourne on October 27 a report that would be of great value to the Federal Council in the light of its negotiations with the Commonwealth Government on various problems arising from its agreement with the Government on P.B.A. and P.M.S.

What Public Relations Means.

Mr. Attiwill described his activities throughout the Commonwealth in promoting a better relationship between retail chemists and the public, the medical profession and kindred organisations. If retail chemists

Meeting of Far Northern Guild Zone members at the Pacific Hotel, Cairns, on August 28 to hear addresses by Messrs. Eric Scott, Guild Federal President; W. A. Lenehan, Queensland State President; and Keith Attiwill, Federal Director of Pharmaceutical Public Relations. Taken in the hotel lounge, with its display of tropical greenery, the group comprises (left to right) Messrs. B. Nahrung, W. C. Balzer, G. Moses, A. Wadley, J. Louis, F. M. Woods, J. A. Costin, Eric Scott, H. J. Ling, W. A. Lenehan, Keith Attiwill, Arthur Tovey, M. Ackland, N. Maize, C. Herries, W. G. O'Brien and A. Shaw.

wished to preserve their identity and maintain their profession and economic status in a fast-changing world, they must demonstrate that they were willing and able to give a better service to the public than any Government clinic or other Government-controlled health service. A profession or an organisation could not have a better relationship with the public than the one they actually created through their own day-to-day contact with the public. If their service was indifferent or inferior by comparison with other avenues, the public would react unfavourably, and no amount of propaganda could disguise this bad relationship with the public.

Mr. Attiwill said the greatest ally he had in selling good public relations to the people of Australia was the individual chemist. The public today had a good opinion of retail pharmacy, and this enabled the Public Relations Secretariat to impress governments, parliaments and public service officials with the strength of the Guild's claim for satisfactory treatment as the health scheme developed.

The following members were present at the meeting:

Rockhampton.—Messrs. E. J. Brock, R. E. Deacon, J. S. Gordon, H. P. Fitzpatrick, C. B. Reiman, F. W. Shotker, F. G. Skinner, J. K. Brownlee, D. Symons, B. J. Pearson, C. F. Regan and A. M. West.

Yeppoon.—Mr. V. J. Byriel.

Mt. Morgan.—Mr. E. M. Parsons.

Cairns Meeting.

Flying direct from Rockhampton to Cairns, the visitors were greeted at the airport by Mr. H. J. Ling, the chairman, Mr. A. B. Tovey, secretary, and Mr. W. C. Balzer, former chairman of the Far Northern Zone of the Guild.

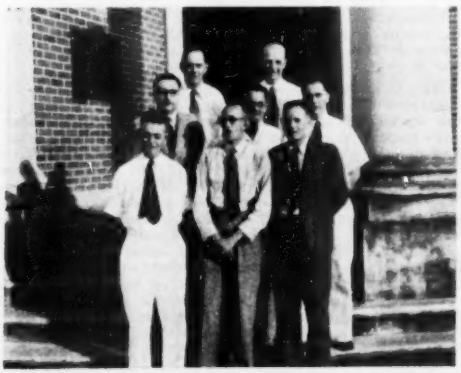
On Sunday morning, August 28, the visitors addressed an enthusiastic meeting of members of the Far Northern Zone. They included a number of chemists from distant areas, notably Mr. T. J. Costin, of Mareeba, a veteran Guild member, who showed great interest and enthusiasm in the proceedings.

Chemists and Medical Benefits Fund.

The visitors were told that the Far Northern Zone had withdrawn from the Queensland hospital benefits scheme because of confusion and lack of information. It was explained that many chemists thought that because of the Queensland State hospital service, the system of voluntary hospital and medical benefits insurance would need to be very carefully explained to the chemists before the public would take much interest.

Mr. Scott and Mr. Attiwill emphasised the importance of a proper understanding between the Queensland hospital and medical benefits fund authorities and the chemists.

It was agreed that Mr. Attiwill should take the matter up direct with the Medical Benefits Fund of Australia, so that the relationship of the chemists to the fund in Queensland would be on a satisfactory basis. When this is done, Mr. Attiwill will advise the Queensland Branch of the Guild, which will then be in a position to recommend to the Guild a course of action by the various Guild zones.



Innisfail and Tully chemists with Guild officials at Innisfail on August 26. Mr. W. A. Lenehan, Queensland State Guild President, is shown in the front of the group between Messrs. G. A. Rothnie and R. J. Hayles, of Innisfail. In the centre row are (left to right) Messrs. L. J. Emery (Tully), F. M. Woods (Innisfail) and C. Torre (Innisfail). At the back are Messrs. Keith Attiwill (left) and Eric Scott.

Mr. Lenehan's Review.

Mr. Lenehan told the meeting that this was the first official Guild visit by representatives of the Federal Council and the State Branch Committee for five years. By seeing as many members personally as possible they would strengthen a closer relationship. The Far Northern Zone had always been one of the strongest groups within the Guild. He regretted that distance made it impossible for the Far Northern Zone to have its own representative on the State Branch Committee, but the Guild tried to organise itself so that the country members shared in all the benefits of the mighty Guild organisation.

Reviewing the activities of the State Branch Committee over the last year, Mr. Lenehan said that one of its main objects had been to try to obtain an increased dispensing fee, but this had not been successful.

Mr. Lenehan asked for full support for the Guild Federal Merchandising competition. He said that the time might come when the Guild contract lines would be a most favourable stand-by in pharmacy.

Referring to the successful meeting at Rockhampton, Mr. Lenehan said that the attendance had been excellent, and he thought that members of the Rockhampton Zone realised the value of the Guild organisation and of co-operation amongst themselves in solving local problems.

Mr. Lenehan ended by congratulating Mr. Ling and Mr. Tovey on the efficient organisation of the Far Northern (Cairns and District) Zone.

Fight for Just Terms.

Mr. Scott said that Guild members had rightly been perturbed about the removal of sulphadiazine from the wastage table, the sudden removal of lines from the list of pharmaceutical benefits, and the unsatisfactory returns up to date for dispensing under the pensioner medical services. When these matters had been explained fully the overwhelming majority of members recognised the fight the Guild was waging.

Many questions were asked and answered, and before the meeting adjourned for lunch as guests of the State Branch, a vote of thanks to Messrs. Scott, Lenehan and Attiwill was moved by Mr. Ling and supported by Mr. W. C. Balzer and Mr. K. Woods (Innisfail).

Mr. Ling said: "Some members ask 'What is the Guild doing?'—but today we have heard something of how the Guild has stood up to governments to ensure reasonably satisfactory terms and conditions under P.B.A. and P.M.S. What would have happened if there had been no Guild? Look at what the Guild does for your fees. We pay no sales tax on anything we compound. If you do not get anything else from your Guild fees, you have gained immeasurably from that one action."

Mr. Balzer said that the Far Northern Zone was greatly indebted to the visitors for the full and encouraging explanations they had given of current problems and negotiations.

Mr. Woods congratulated the State Branch, through Mr. Lenehan, on a successful year. Referring to the Federal sphere, he said that Mr. Scott and Mr. Attiwill were certainly "on the ball."

Mr. Lenehan, in responding, said that the arrangements for the visit to Cairns had been excellent. He added: "I am proud of this zone. I think you have shown just exactly how to run a zone. Your work has been most productive of good. Keep on doing the good work."

The following were present at the meeting:—

Cairns—Messrs. H. J. Ling, A. B. Tovey, W. C. Balzer, C. A. Herries, W. G. O'Brien and A. J. Shaw.

Mareeba.—Messrs. J. A. Costin and N. Maike.

Mossman.—Mr. B. J. Nahrung.

Atherton.—Messrs. A. Wadley and G. M. Moses.

Gordonvale.—Mr. J. A. Louis.

Babinda.—Mr. M. Ackland.

Innisfail.—Mr. F. M. Woods.

On Monday, August 25, Mr. Balzar drove the visitors to Atherton (where they were entertained by Mr. G. M. Moses, Guild member), Herberton and other points on the Atherton Tableland.

On Tuesday, August 26, they were driven to Mossman, north of Cairns (Mr. B. J. Nahrung, Guild member), and then to Innisfail. Here afternoon tea was enjoyed with the following Guild members: Messrs. L. J. Emery (Tully), K. Woods, G. A. Rothnie, R. J. Hayles and C. Torre (Innisfail).

Townsville Meeting.

Messrs. Scott, Lenehan and Attiwill reached Townsville on Wednesday, August 27, and were greeted at the airport by Mr. Arnold Duffield, chairman of the Townsville Zone, who drove them to the Seaview Hotel. As the guests of the State Branch Committee, the visitors and members of the zone dined at the hotel, and the meeting followed. This again was highly successful.

Mr. Lenehan Stresses Unity.

Mr. Lenehan opened the meeting, and he said: "We are members of a mighty organisation, and today, more than ever, we all recognise the need for strong unity to combat those who would sweep us aside. Though we may not be entirely satisfied with the terms and conditions of our P.B.A. contract with the Commonwealth Government, we must never forget that if we had negotiated as individuals we would be in a sorry mess today."

Distance made it impossible, Mr. Lenehan went on, to have representation from the whole State on the State Branch Committee. But the Committee would welcome representation at its monthly meetings from such a zone as Townsville. Any major problems which arose at zone meetings should be sent promptly to Brisbane, and the State Branch Committee would do everything it could to help.

Mr. Scott, in recounting the Guild's activities over P.B.A. problems, said that some of the delays in solving these by negotiation were "maddeningly irritating." Recently the Guild Executive had interviewed Sir Earle Page, and put up a strong case for the following:—

Notice of price alterations; the replenishing of doctors' bags; and P.M.S.

Mr. Scott said that an averaging scheme must hurt somebody, because to strike an average there must be "highs" and "lows." The Federal Council had agreed unanimously that averaging for P.M.S. must go. The Federal Executive had taken this decision to Canberra.

Mrs. H. J. Ling, wife of the President of the Far Northern (Cairns and District) Guild Zone, and Mrs. Arthur Tovey, whose husband is Secretary of the zone, photographed at Cairns airport when they accompanied their husbands to farewell Messrs. Scott, Lenehan and Attiwill after their official visit to the zone.

Mr. Scott then explained the steps to be taken before the Government could switch over to a pre-priced scheme.

"Not in Mood for Reduced Fee."

"Pharmacy," Mr. Scott declared, "is not in the mood to accept a reduction of the P.B.A. dispensing fee. Anybody who attacks us on our professional side merits our strongest retaliation."

Mr. Attiwill described Federal Executive and Public Relations Secretariat activities at Canberra and in the various States. These involved many interviews with ministers, members of the various political parties and departmental heads, as well as the press and radio roundsmen. He said that the Guild recognised the importance of "internal public relations," and that was why so much of his time was spent in helping to resolve problems within pharmacy itself. To be able confidently to "sell" public relations to the community, pharmacy must see that its own house was in order. The loyalty of Guild members to their own organisation and the standard of professional and business practice, which the Guild strove to maintain on the highest level, must be reflected in the everyday contact between the chemists and their customers throughout Australia.

Mr. Attiwill mentioned the generous space which had been given by the Queensland newspapers during their tour to Mr. Scott's striking commentaries upon the chemists' important role in the health service.

Tribute to Mr. Scott.

Mr. Duffield proposed the health of the visitors, with a vote of thanks to the Guild Federal Council for having made it possible for Mr. Scott and Mr. Attiwill to go north. To Mr. Duffield's mind Mr. Scott's stirring

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Mr. Keith Attiwill handled with cool confidence this crocodile at Cairns Airport because (a) the "croc" was about 12 inches long, and (b) it was very, very dead.

speech alone had justified the action of the Guild in "keeping Mr. Scott's as Federal President." Mr. Attiwill's address had been lucid and had done more than could possibly have been done by correspondence. Until he had spoken they had known very little about the medical benefits scheme. They were also honoured and pleased by Mr. Lenehan's visit and explanatory talk.

Mr. H. Rawkins, a senior chemist in Townsville, supported the toast. He said that the addresses had been of great value to all, and it was very fine to see so many chemists present from the surrounding country.

The toast was also supported by:

Mr. F. J. Behan: "For ten guineas we get very well served."

Mr. E. G. Clark: "I feel a lot better about the doings of the Guild then when I came."

Mr. J. F. Collins: ". . . gratitude to our distinguished guests. I would not have missed these addresses for anything."

Mr. A. J. Nucifora: ". . . pleasure to come from Ingham, and I don't care whether we get home at dawn or midnight tomorrow."

Mr. M. J. C. Woodward: "A most enjoyable and instructive evening."

Mr. Scott, in responding, said that the greatest tribute he and his visiting colleagues had had was that at all these meetings the attendance had been a little short of 100 per cent. He considered it the duty of the Federal President to meet every individual member of the Guild as often as he could. Perish the day when criticism languished in the Guild.

The chairman announced apologies from Mr. C. V. Armati and Mr. P. H. Smith.

Many questions by members were answered by the three visitors. Mr. Scott said that the Guild would ask the Department to consult it before they printed any new forms, etc., that he would take up with the Bureau the question whether it had prepared a case for increased free rates, and that he would take up in Melbourne the shortage of "Lactogen."

The following members attended the meeting:—

Townsville.—Messrs. W. H. Byrne, G. E. Bourke, H. Rawkins, G. Rawkins, W. A. Duffield, F. J. Bray, R. C. Simpson, M. J. C. Woodward, W. P. Hallinan, Mrs. C. M. Williams and Messrs. S. C. Ritchie and M. L. Thurecht.

Ayr.—Messrs. F. J. Behan, A. Dal Sante and C. E. Dempsey.

Home Hill.—Mr. E. G. Clark.

Charters Towers.—Messrs. G. Griffiths and J. F. Collins.

Ingham.—Messrs. A. J. Nucifora, S. G. Sadlier and Miss Ebneter.

Messrs. Griffiths and Collins travelled 80 miles from Charters Towers to Townsville to attend the meeting, and returned the same night. Mr. Clark came 70 miles from Home Hill, and Messrs. Nucifora and Sadlier and Miss Ebneter came 80 miles from Ingham.

Enthusiasm at Mackay.

Greeted on the tarmac by the genial Mr. Jack Clark, president of the Mackay Zone, the visitors reached Mackay airport about 7 p.m., an hour later than schedule; but the resourceful Mr. Clark had arranged with the Ambassador Hotel management to delay dinner. There was again 100 per cent. attendance of zone members, and the official dinner was a highly enjoyable one. It merged in due course into the meeting, which was remarkable for expressions of loyalty mingled with keen questioning on all the subjects which had been raised at the other zone meetings on the tour.

The following members attended:—

Mackay.—Messrs. J. F. Clark, M. W. Michelmore, J. S. Hunter, A. W. Keller, A. H. Howard, K. M. Dupuy and C. J. Miles.

Sarina.—Mr. N. E. Clarke.

Proserpine.—Mr. C. J. Monkhouse.

Guild Pricing Service.

Mr. Lenehan described steps taken by the Federal Council in the first place, and followed up by the Queensland State Branch Committee, to provide members with a first-class, accurate and complete set of price lists. He also repeated his survey of State Branch Committee activities.

Mr. Scott said that the object of the tour was to ascertain the attitude of chemists and the general public throughout Queensland to the pharmaceutical benefits scheme. His findings would be presented to the Federal Council when it met in Melbourne on October 27, and they would provide valuable evidence for the negotiations with the Government on the review of P.B.A. terms and conditions.

After explaining in detail the main objects of recent Federal Council discussion, Mr. Scott gave another stirring address on the work of the Guild.

Mr. Scott Interviewed at Mackay.

During the evening he was interviewed by the Mackay "Daily Mercury," which gave him a full column next morning.

"The chemists," said Mr. Scott in the "Mercury," "could give a better service to the public as contractors supplying free medicine on behalf of the Government than they could under a Government regulated service.

"Mackay chemists have demonstrated this very effectively. The relationship between chemist and doctor and patient has been very good under the free medicine scheme."

Mr. Attiwill gave a half-hour address on public relations, following which there was a general discussion and many questions.

The chairman said that members had been hostile about mistakes in Guild price lists in the past, and were prepared to pay well for accurate lists. They asked that the Federal Executive prepare a case for increased zone rates, and the Mackay Zone was pre-

pared to collect and collate figures for the Federal Executive to pass on to the Bureau of Pharmaceutical Statistics.

"Will Pay for Good Pricing Service."

Proposing a vote of thanks to Messrs. Scott, Lenehan and Attiwill, the chairman said that the conclusions reached had shown that the discussion had got hottest over prices. Bluntly stated, the Guild had not been "on the ball" with prices. The Guild system of pricing had been done by men who worked all day in their pharmacies and sweated all night over prices. Guild members did not want their prices for nothing; the Guild could charge what it liked—if there was one thing the chemist wanted from the Guild it was a price list. It was no good sending out four pages of foolscap.

Mr. Scott: "All that has been altered. In a week's time a new Drug and P.P. List comes out with amendments."

The vote of thanks was supported by Messrs. N. E. Clarke (Sarina), C. J. Monkhouse (Proserpine) and M. W. Michelmore (Mackay).

Before leaving Mackay for Brisbane on Friday, August 29, Mr. Lenehan was official host at afternoon tea given specially for Mackay registered assistants—Messrs. A. J. R. Barnett (Dupuy's Pharmacy), R. Ingram (J. F. Clark's Pharmacy) and M. Briggs (M. Michelmore's Pharmacy).

Final Meeting at Toowoomba.

The last meeting of the tour was that of the Toowoomba Zone held at Toowoomba on Sunday afternoon, August 31. Mr. C. A. Nichol, State Guild Vice-President, Mr. L. Hall and Mr. A. B. Chater, members of the State Branch Committee, accompanied Messrs. Scott, Lenehan and Attiwill.

Mr. M. N. Coote, Chairman of the zone, presided over the meeting. There was a splendid attendance consisting of the following:—

Toowoomba.—Messrs. A. L. Hodgson, B. A. Gegg, W. Watson, W. J. Hile, J. J. Reinke, C. Loxton, S. J. Goodrick, T. A. Murray, M. N. Coote, M. M. McLennan, M. J. Sherry, K. Petty and Mrs. B. Goodrick.

Stanthorpe.—Messrs. R. R. Chilton and L. C. McDougall.

Inglewood.—Mr. J. Chapman.

Killarney.—Miss B. M. Laurenson.

Oakey.—Mr. C. J. H. Schull.

Crow's Nest.—Mr. F. W. Burton.

Pittsworth.—Mr. G. E. Cain.

Laidley.—Mr. C. E. White.

Dalby.—Messrs. C. P. Rigg and R. Webster.

Mr. Chapman travelled 128 miles from Inglewood to Toowoomba to attend the meeting.

Mr. Scott, after reviewing Federal activities, said that in Victoria and New South Wales there were some signs of reduced turnovers, but there were no such signs in Queensland. Perhaps that was because Queensland relied largely upon primary production and there was little or no unemployment in its secondary industries. Eventually Queensland would get some signs, and chemists might have to concentrate on selling profitable lines. Over the last 10 years some chemists had become careless, and had not pushed to the front the lines of the old-established friends of pharmacy.

"Best Defence Organisation."

"You have the best pharmaceutical defence organisation in the world, and I have seen most of them," said Mr. Scott. "Twenty-five years ago chemists in little groups were powerless to repel attacks by politicians and unfriendly manufacturers. Now if you attack one Guild member you attack the lot."

Mr. S. J. Goodrick asked whether pharmacy would be represented on the Formulary Committee under the Pharmaceutical Benefits Act.

Mr. Scott: "The Minister has promised this when the consolidated health services bill is introduced. The date of this is uncertain."

Mr. Lenehan's Tribute to Zones.

Mr. Lenehan thanked Mr. Hodgson for his service on the State Branch Committee, and expressed regret that he had not renominated. This meant that Toowoomba district had no representation. He urged Toowoomba to make itself an important zone—a state branch committee in miniature, working through the State Branch and the Federal Council. The Northern Queensland zones were operating well. He emphasised the advantages of working closely together in groups for mutual help within the framework of the Guild.

In a survey of State Branch Committee activities Mr. Lenehan dealt with the Guild price lists, and said that because of the increased services being given by the Guild and the higher administrative costs, it was impossible to improve the pricing service in the subscription. That was why they were called on to pay three guineas for a pricing service. North Queensland had said: "We do not care what a good pricing service costs—give it to us and we will pay for it."

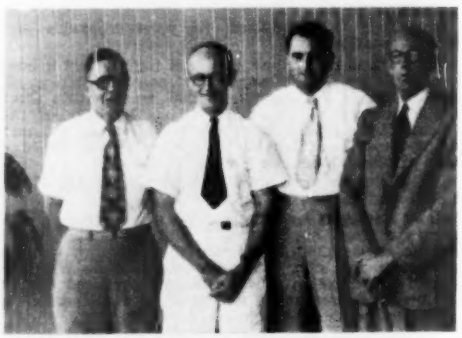
Mr. Lenehan concluded: "The time has arrived when we have to get more solidly behind the good profit lines in pharmacy. The good time party is over. We must rely on the good lines to bring customers into our shops. We must have a sales campaign on 'chemist only' lines. Don't treat that lightly. We want to seek customer traffic."

Mr. A. B. Chater emphasised the importance of chemists pricing prescriptions correctly according to the Guild price lists.

Mr. Hodgson moved a vote of thanks to the speakers, and it was carried by acclamation.

Apologies were received from Miss Redmond (Kingaroy), Mrs. E. Thomson (Clifton) and Miss M. G. Neild (Gatton).

The meeting decided to apply to the State Branch Committee for the district to become the Darling Downs Zone. Members expressed a desire to hold regular meetings at various towns in the zone and "to get to know each other better."



At Cairns Airport. (Left to right, Messrs. H. J. Ling, President, Far Northern Guild Zone; W. C. Balzer, former President; Arthur Tovey, Zone Secretary; and W. A. Lenehan, President of the Queensland Branch of the Guild.

Commonwealth and State News

QUEENSLAND

PERSONAL *and* GENERAL — *State News*

A holiday at Sydney and the Blue Mountains was the choice of **Miss Beris Rose.**

Mr. J. A. Wilson has purchased the pharmacy conducted by **Mr. T. F. Carroll,** at Banyo.

Mr. A. H. Carnwell, of New South Wales, has purchased **Mr. G. R. March's** branch pharmacy at Tugun.

Mr. P. J. Sullivan, of Bardon, has opened another branch pharmacy known as the Valley Pharmacy at Brunswick street, Fortitude Valley.

A northern visitor to Brisbane during the month was **Mr. N. E. Clarke,** of Sarina. **Mr. A. B. Haughton** was in charge of Mr. Clarke's pharmacy during his absence.

Mr. R. L. Wilkinson, of the Dispensary Staff at the Brisbane General Hospital, has returned to Brisbane after holidaying at Coolangatta.

Mr. J. J. Doyle, the Chief Pharmacist, Commonwealth Department of Health, Brisbane, paid a visit to North Queensland during the month, when meetings were held in Cairns, Innisfail and Townsville, to give him the opportunity of meeting and addressing chemists in those centres on Pharmaceutical Benefits and Pensioner Medical Services requirements.

Film Evening.—By courtesy of Burroughs Wellcome & Co. (Aust.) Ltd., some excellent films were shown to an enthusiastic audience at the Shell Theatrette, Brisbane, on August 29. At the conclusion of the films supper was served, and on behalf of the Council of the Society, who arranged the evening, Mr. Barnett conveyed thanks and appreciation to Mr. T. C. Harveyson, of Burroughs Wellcome & Co. (Aust.) Ltd.

GUILD S.B.C. OFFICERS ELECTED.

At the monthly meeting of the State Branch Committee held on September 4 the following officers of the Guild were re-elected for the ensuing year:—

President: Mr. W. A. Lenehan.
Vice-President: Mr. C. A. Nichol.
Hon. Treasurer: Mr. C. W. Noble.
Committee: Messrs. A. B. Chater, J. J. Delahunty, A. W. Eberhardt, L. Hall, L. W. Huxham, W. E. Martin, A. N. C. Munro, G. Nolan and F. H. Phillips.

ANNUAL REPORT OF PHARMACEUTICAL SOCIETY.

The Annual Report of the Pharmaceutical Society of Queensland presented at the Annual Meeting on September 23 indicates a year of activity and progress.

Twenty-eight new members were admitted, and a number of associates transferred to full membership. Seventeen apprentice members were admitted to associate membership. Mr. W. H. Green, after 50 years' membership, was made a Life Member. The Society now has 366 subscribing members, 80 associates, 1 honorary member, 30 life members by subscription and 9 honorary life members.

A full and interesting programme of lectures and evenings was arranged, and the year saw the discussion group well established. This group meets every two months. A mailing list for notes on the discussion group's activities has been compiled, and consists of several hundred names. Country members are invited to forward enquiries on any problems they have.

Appreciative reference is made to the Journal and to the work of the Federal Council of Pharmaceutical Societies.

The balance-sheet shows accumulated funds amounted to £948/1/9 as at June 30, 1951. Income for the year was £1458, from which £50/12/- is transferred to accumulated funds. The benevolent fund account shows a credit balance of £829/2/6.

OBITUARY.

It is with regret that we announce the death of Mrs. Elizabeth Lenehan, widow of the late Robert Lenehan and mother of Messrs. H. R. and W. A. Lenehan. Prior to the death of Mr. Lenehan, Senr., some years ago he took a very active interest in pharmaceutical matters, and now Mr. W. A. Lenehan is actively associated with the Guild. To Messrs. H. R. and W. A. Lenehan sincere sympathy is extended in their bereavement.

Death of Mr. R. C. Rutter.—As the Journal goes to press advice has just come to hand from America that the death took place there on September 20 of **Mr. R. C. Rutter.** Mr. Rutter left Brisbane three months ago to visit his daughter in America. In the meantime he had attended the Pharmaceutical Association Centenary Conference in Philadelphia, and apparently it was after the Conference that he took ill, and after several weeks in hospital he died on September 20.

Mr. Rutter will be sadly missed in pharmaceutical circles, and many friends join his wife and daughter in their sorrow.

Further reference to Mr. Rutter's pharmaceutical activities will be made in next issue.

QUEENSLAND (Continued)

CHEMIST BOWLING NOTES.

Three rinks visited Indooroopilly on September 3, when the scores were as follows:—

	Chemists	Indooroopilly
College, Ward, Belford	24	17
Atkins, Dowd, Riddell, Lewis ..	16	36
Ockleford, Hill, McLeod, Fitzsimmons	16	20
	56	73

On September 14 an all-day outing to Caloundra was enjoyed, when the local club members were the victors for the day, the scores being:

	Chemists	Caloundra
Roush, Roush, Ward, Whitehead	20	17
Ockleford, Thurecht, Coffey, Belford	8	47
Elliott, College, Lewis, Pumfrey	26	25
	54	89

The games listed for October include the monthly match on October 1, which will be played at the Coorparoo green, and a pairs competition among club members will be played on October 5 at Booroodabin.

INTERLUDE AT MAGNETIC ISLAND.

By Keith Attiwill.

With Mr. Arnold Duffield as our guide, Mr. Eric Scott, Mr. W. A. Lenehan and I spent one of the few "free" mornings of our recent entire tour in a launch trip to Magnetic Island. On board Mr. Duffield introduced us to Mr. Hales, proprietor of a famous fleet of launches round these parts. When the launch tied up at the little rock-girt pier at Arcadia, Magnetic Island, Mr. Hales made us his guests on a brief taxi ride. The only thing briefer than that brief taxi ride would be jet propulsion, and beyond the sound barrier you wouldn't get half the thrills and laughs of that taxi ride!

Stepping nonchalantly ashore, we were greeted by a bronzed, laughing, grizzle-haired old Australian in shorts and short-sleeved shirt. "Hop in, gents!" he said cheerily. "Mr. Hales sez I was to show you the island and get you back before the launch sails. Let's go."

"Bill" Lenehan and I lit cigarettes as the four of us climbed into a Holden saloon. The driver turned her on a sixpence: there was not much more room on the bijou wharf. We whizzed down about 10 ft. of timber wharfing, heading for a granite boulder about the size of the Great Pyramid. With a flick of the wrist (did I mention he was a one-handed driver, and used the other one to point out various features?) he turned the car toward another pyramid. Then we seemed to dash right through granite boulders, one on each side and another lying over them, creating a nightmarish gap. (There were more curves in that quarter mile than there are in the cost of living spiral.) Bungalow—guest house—man—woman with baby—beach girl—another beach girl—lots of beach girls—palms—pawpaw trees—more beach girls—flashed past us. The driver grinned broadly. "Stand still, Mum!" he said as we deftly circled a woman and child. It was terrific.

We got back to the little pier, and as we boarded the launch Bill Lenehan and I observed that our cigarettes were only half smoked. We'd kept them in our hands. If we hadn't, I know we would have swallowed them.

Thank you, Mr. Hales, and thank you, driver. We didn't get your name. Maybe it is "Speed" Gordon.

PHARMACEUTICAL SOCIETY — *Council Meeting*

The Council of the Pharmaceutical Society of Queensland met at Drysdale's Chambers, Brisbane, on August 26.

Attendance.—Mr. V. Barnett (Chairman), Misses E. A. Everett, E. F. Chalmers, Messrs. H. G. E. Sneyd, E. W. Vance, R. G. Gardner, L. A. Stevens, J. E. McCaskie, A. B. Williams, and the Secretary.

Mr. Barnett said that Mr. R. V. S. Martin was attending Section "O" meeting in Sydney, and prior to leaving Brisbane had asked if he (Mr. Barnett) would chair the Council meeting.

Report of Tripartite Meeting.—Mr. Barnett reported that on July 29 the Tripartite Committee had met representatives of master pharmacists, who submitted their views concerning a future course of training for pharmacy apprentices. Then on August 20 the Committee met to collate the views submitted to it, prior to Mr. Martin leaving to attend the Interstate education discussions in Sydney on August 27. Briefly on broad lines the Committee's recommendations were:

Entrance: Matriculation standard. This standard brings to tertiary level, thus entitling student to Commonwealth subsidy.

Length of Apprenticeship: Three years apprenticeship concurrent and final year at approved teaching institution. Country students to come to teaching institution full time for last three months of third year apprenticeship to acquire working knowledge of practical subjects.

To proposed scheme of studies was also submitted.

The Committee also recommended that, to prevent overloading of course, ancillary subjects, e.g. Pharmacology, Bacteriology and Physiology, should be limited. Same to be taken only as required for interpretation of B.P. Further study, if any, to be post graduate.

After discussion, it was resolved that the report be received.

Correspondence.—From Hon. Gen. Secretary Pharmaceutical Association, advising an invitation was extended to the Association to send a representative to the Centenary Convention of the American Pharmaceutical Association to be held in Philadelphia, U.S.A., on August 17. The offer was accepted, and Mr. W. R. Cutler, President of the Association, was leaving Sydney on August 14.

The Secretary reported that by a coincidence Mr. R. C. Rutter was also visiting Philadelphia at the time of the conference. This information had been passed on to Mr. Kent, and he had written to Mr. Rutter and also the Secretary of the American Pharmaceutical Association, enquiring if it would be possible to extend an invitation to Mr. Rutter to participate in the conference celebrations. In reply, the Secretary had enquired if Mr. Rutter would extend greetings on behalf of Queensland. Mr. Gardner said he had recently received a letter from Mr. Rutter in which he stated that he was looking forward to attending the conference in Philadelphia.

From Mr. W. R. Cutler, conveying his thanks and the thanks of the Association to the Council for its contribution to expenses of his visit overseas. Stating he will do his best to uphold the confidence that had been shown in him.

From Pharmaceutical Association, forwarding copy of letter from Dr. T. Potjewijd, General Secretary of the International Pharmaceutical Federation, with regard to representation of Australia in the Association. For the information of the meeting, the Secretary read the correspondence.—After discussion, Mr. Gardner moved, Mr. Williams seconded, that this Council considers the membership fee too high in view of the benefits accruing from membership. Carried.

Pharmaceutical Society of Victoria, forwarding copy

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QUEENSLAND (Continued)

of leaflet prepared for distribution to all doctors and chemists in this State, following a recommendation of the Victorian Medico-Pharmaceutical Liaison Committee. Members of the Council were very impressed with the brochure which had been prepared by the Victorian Committee. It was decided to defer further discussion on this matter until later in the meeting. [See "Poisons Regulations."—Ed.]

Associate Members Elected.—Messrs. A. W. Day and B. F. B. Page.

Poisons Regulations.—Mr. Barnett reported that the Poisons Regulations of 1947 had now been consolidated up to May 31, and copies were available from the Government Printer. Mr. Barnett said these regulations used to be procurable for 1/- per copy, and it was the practice of the Council to make a copy available to each member free of charge. Unfortunately the price had now increased to 5/3, which made it impossible to distribute complimentary copies to members.

Mr. Barnett said he was very impressed with the brochure prepared by Victoria for the use of doctors and chemists, and he thought that possibly the Poisons Sub-Committee could prepare data which would be of assistance to members of both professions in this State.

Mr. Gardner said he agreed with the views expressed by Mr. Barnett. The cost of the Poisons Regulations had increased so much that it would be impossible to make complimentary copies available, but if the Sub-Committee would take out the salient facts of the regulations he felt that this would be most helpful to chemists and doctors.

After discussion, it was resolved that the Poisons Sub-Committee meet at the earliest opportunity.

Presentation of Pestle and Mortar.—The Secretary reported that Dr. Gutteridge had kindly made an iron pestle and mortar available for the Society Museum. Members of the Council remarked on the thoughtful gesture of Dr. Gutteridge, and the Secretary was requested to convey their thanks to him.

The meeting terminated at 10.45 p.m.

THE GUILD

S.B.C. Meeting

The State Branch Committee of the Queensland Branch of the Guild met at Drysdale's Chambers, Brisbane, on September 4.

Attendance.—Messrs. W. A. Lenehan (President), C. A. Nichol, C. W. Noble, A. W. Eberhardt, F. H. Phillips, L. Hall, L. W. Huxham, A. B. Chater, G. Nolan and the State Secretary.

President's Report on His Visit to North Queensland.—The President gave a comprehensive report on his visit to Cairns, Townsville, Mackay, Rockhampton and Toowoomba in company with the Federal President and the Federal Director of Pharmaceutical Public Relations.

Summed up, Mr. Lenehan said the visit had proved to him conclusively that a half hour of spoken words is worth more than volumes of printed matter. After the different addresses were delivered, the visitors found that there were very few questions to be asked, as most of the members' worries were answered in the addresses.

Members of the Committee said they were pleased to learn from the President's report how successful the visit had been. They agreed that there was nothing like personal contact, and with the increased subscription it was hoped that it would be possible to make yearly visits to country areas.

Report on Patents List.—Mr. Nichol said all the prices which had changed up to September 1 had been included in the patents list which was now being printed. Mr. Nichol said he would like to thank the members of the Pricing Committee for the meetings they had attended and the time involved in preparing this list. Mr. Nichol said he also wished to thank the office staff for the part they had played in typing the list and in putting all the alterations through. He said he would like appreciation of these services recorded in the minutes. Seconded by Mr. Phillips. Carried.

New Member Elected.—Mr. A. M. Grant-Taylor.

Copying of Prescriptions.—Mr. Lenehan said since the advent of Pharmaceutical Benefits a number of chemists had decided not to copy prescriptions. However, it had been suggested that if a chemist dispensed a prescription, did not copy it, and the patient should die, in a case at law the chemist might be placed in an invidious position. As far as he knew, under the Poisons Regulations it was only necessary to copy prescriptions containing Restricted and Dangerous Drugs. However, seeing that the point had been raised, he considered it advisable to endeavour to ascertain if it is mandatory for a chemist to copy prescriptions. As a first step, it was suggested that enquiries be made of the Health Department concerning the copying of prescriptions.

The meeting terminated at 11 p.m.

SOUTH AUSTRALIA

PERSONAL *and* GENERAL

State News

Mrs Hunter took charge of Mr. G. Smylie's pharmacy at North Walkerville in recent weeks.

Mr. E. Stevens has been managing Runge's Pharmacy, Grenfell street arcade.

Mr. D. Chick is now managing Mr. N. Dandon's new pharmacy in Croydon.

Mr. T. Curnow intends to open a pharmacy in Clarence Gardens in about two months' time.

Mr. R. Shetliffe has registered a new pharmacy near the Black Diamond Corner in Port Adelaide.

Mr. A. Field will open a pharmacy early in December in Woodlands Park.

Mr. F. Potts has resigned his position in the Pharmacy Department of the Royal Adelaide Hospital, and will open a pharmacy in Keith early in November.

Mr. H. E. Martin has moved the site of his branch pharmacy in Rosewater to a new position on Torrens road. Mr. P. Tonkin remains in charge.

Mrs. H. Southcott has been managing the pharmacy conducted by Mr. A. Russell, of Hyde Park, during his vacation.

Mr. E. Carlier has assisted Mr. R. Coultas, of Hanson street, and Mr. D. Check, manager for F. Moore at Underdale.

Mr. D. Moriarty acted as reliever for Mr. J. Stain, of St. Morris; Mr. K. Frost, of Kirkcaldy; and at J. White & Son, North terrace, Adelaide.

FRIENDLY SOCIETY MEDICAL ASSOCIATION RELIEVERS.

Mr. B. Kildea to Mr. H. Gilbert, Henley Beach; Mr. K. Pawson to Mr. F. Gould, Glenelg; Mr. G. Townsend to Mr. P. Argall, Magill road; Miss P. Payne to Mr. H. Flood, Reade Park, and to Mr. P. Cox, Rugby.

Mr. C. A. M. Reid made a hurried visit to Sydney during September, leaving Mr. F. Hiddle in charge at Glenelg.

SOUTH AUSTRALIA (Continued)

Mr. A. Frayne has been acting as relieving manager for Warren's Pharmacy in the John Martin Emporium during the absence on holidays of Mr. S. Chodowski.

Mr. A. W. Nicholas has been assisting Mr. J. Windle, of Walkerville.

Mr. A. Horton spent a week at Ennor's Pharmacy, Charles street, during September.

Mr. A. Ramsey has had an extended engagement with Mr. H. Sherman, of Foy & Gibson Ltd.

Mrs. G. Allison spent a week at Aldgate with Mr. C. Newson early in September.

The pharmacy at Marryatville previously conducted by Mr. R. Bishop is now registered as being in charge of Mr. Bishop and his son, Mr. W. Bishop.

ENGAGEMENTS.

Joyce, daughter of Mr. and Mrs. E. Muxlow, of Norwood, to Peter, son of Mr. and Mrs. J. H. V. Cox, of Glenside.

Dee, daughter of Mr. and Mrs. W. G. Parsons, of Oaklands, to Douglas Jones, of Victor Harbour, son of Mrs. J. Dornan and the late Mr. C. A. Jones.

The engagement is announced of Lois Eileen, younger daughter of Mr. and Mrs. D. G. Swift, of Glandore, to Maxwell George, youngest son of Mr. and Mrs. J. S. Ramsey, of Glandore.

The engagement is announced of Faye, only daughter of Mr. and Mrs. H. K. Thomas, of Unley, to Hal, elder son of Mrs. H. Flood, of Woodlands Park, and the late Mr. Harry Flood.

The engagement is announced of Maxine, younger daughter of Mrs. Keast and the late Mr. S. Keast, of Busselton, W.A., to Donald, elder son of Mr. K. E. Bardolph, M.L.C., and Mrs. Bardolph, of Dennington, South terrace, Adelaide.

Congratulations.

Approaching Marriage.—Lynette Margaret, daughter of Mr. Ernest Short, of Myrtle Bank, and the late Mrs. Short, will marry John William, son of Mr. T. E. Gilchrist, of Unley, and the late Mrs. Gilchrist, in St. Laurence's Church, North Adelaide, at 10.30 a.m. on October 18. The wedding reception will be held at the Hotel Richmond.

Silver Wedding Anniversary.—Mr. and Mrs. H. G. Collyer, Brighton road, Brighton, have pleasure in announcing the 25th anniversary of their wedding, solemnised by the late Rev. F. Bullock at Methodist Church, Brighton, September 10, 1927.—Congratulations.

WEDDING.

Ford—Doe.—Roma B. Ford, of Gleneleg, eldest daughter of Mr. and Mrs. F. A. Ford, was married on September 27 at St. Peter's Glenelg, to Alwyn G. Doe, only son of Mr. and Mrs. L. Doe, of Glenelg.

BIRTHS.

Lenthall.—On September 12 at Memorial Hospital to Marie and Doug—a daughter (Suzanne Marie).

Pawson.—At Glenelg Community Hospital on September 5 to the wife of Keith—a daughter (Rosemary).

Francis (nee Hunt).—On August 26 at T.S.M. Hospital, Bordertown, to Margaret and Robert—a daughter (Anne Elizabeth).

Smyth (nee Baker).—On August 26 at Calvary to Lois and Neil—a daughter.

Odgers.—On August 30 at Burra Hospital to Vonnie, wife of Murray Odgers—a son.

Tiver.—On August 16 at Naracoorte to Patricia, wife of Lloyd C. Tiver—a son.

Congratulations.

OBITUARY.

Coudrey.—On August 17, Joseph Edward Coudrey, of 6 Stamford street, Parkside, beloved brother of Dora Gertrude Coudrey. In his 85th year.

GUILD OFFICE-BEARERS 1952-53.

The South Australian State Branch of the Federated Pharmaceutical Guild elected the following office-bearers for the ensuing 12 months at the September meeting:—

President: Mr. Walter C. Cotterell.

Vice-President: Mr. H. G. Collyer.

Treasurer: Mr. E. L. Miller.

Mr. Cotterell was again appointed Federal Delegate. The Pricing Officer is now Mr. A. A. Russell.

END OF PHARMACEUTICAL EMPLOYEES' ASSOCIATION.

A report published on August 20 indicated that the Pharmaceutical Employees' Association no longer existed. Mr. Deputy President Pellew in the Industrial Court therefore cancelled the Industrial Code registration of the Association.

The Secretary of the Miscellaneous Workers' Union, who applied for the order, intimated that the Association had been merged in the Union, and that since 1949 there had been no election of officers, collection of subscriptions or accounts kept. The Association was defunct.

PHARMACEUTICAL SOCIETY OF SOUTH AUSTRALIA.

The Annual Meeting of the members of the Society was held in the Auditorium of Broadcasting Station 5DN, Churchill Building, 61 Gawler place, Adelaide, on August 27, 1952, at 8 p.m.

The President, Mr. J. D. Garrett, presided over an attendance of approximately 80 members and fourth year students, welcoming all, particularly Mr. L. C. Norman, of Waikerie, a country member of many years' standing.

One of the main items discussed was the irregular sale of Third Schedule poisons. This resulted in the following motion being carried:—

"That this meeting recommends to the Council that an approach should be made to the Department of Public Health with a view to the stricter policing of the Third Schedule requirements, and where breaches are detected that defaulters should be prosecuted to the utmost."

[Further details of this meeting will be published next month.—Ed.]

LACTOGEN PROCESS MODIFIED.

The following information is published at the request of the Council of the Pharmaceutical Society of South Australia, which recently received a communication from the Mothers' and Babies' Health Association forwarding the details of the modified methods used in their centres.

Lactogen 1 tablespoon and ½ teaspoon.
Sugar (cane) .. 1½ teaspoons
Boiled water .. .. .. 4 ozs.
P.C. C. 7.1 F. 1.8 P. 1.7.
Calories per 1 oz. .. 15.3 cals.

Lactogen 2 tablespoons and ½ teaspoon.
Sugar (cane) .. 1½ teaspoons
Boiled water .. .. .. 6 oz.
P.C. C. 6.8 F. 2.4 P. 2.3.
Calories per 1 oz. .. 17.0 cals.

Lactogen 2 tablespoons and 3½ teaspoons.
Sugar .. .. .. 1½ teaspoons
Boiled water .. .. .. 7½ ozs.

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Many Melbourne chemists, alert for new sources of profit, have found the Semak Vitamizer a very useful source of extra profits. Displayed on the counter, this gleaming modern machine is commented on by every second or third customer. After that sales are easy—especially to mothers of young children.

The Semak Vitamizer mixes in seconds what it takes ordinary mixers minutes to do. Its whirring blades make the preparation of infants' meals a quick, easy task. Many new health and invalid recipes are prepared in a trice with a Semak Vitamizer.

In addition it chops, whips, liquefies, grinds coffee, chops nuts, crushes fruit. Makes soap solution from scraps of soap. Saves £ £ £s in grocers' bills; saves hours in cooking; pays for itself. MAKES REAL WHOLEMEAL FLOUR AND PORRIDGE MEAL, FRESH FROM THE WHOLE GRAIN THE GAYELORD HAUSER WAY. Blends vitamin-rich vegetables into delicious new health drinks. Makes fruit milk shakes and Yoghourt drinks in 45 seconds, etc., etc., etc.

INVALUABLE IN PHARMACY.

Ointments, creams, emulsions and bulk mixtures requiring high-speed maceration are prepared in a flash with a Semak Vitamizer. Many pharmacies, including hospital pharmacies, use Semak Vitamizers for this purpose. Preparations for tube-feeding or non-masticating patients are prepared in seconds.

100% GUARANTEED

The Semak Vitamizer is unconditionally guaranteed to be satisfactory for 12 months. Every machine a chemist sells brings him £5 clear profit.

Prices are as follows:—
220 volts AC-DC - - £21 Retail
32 volts DC (home lighting) £24 Retail
TRADE PRICES ON APPLICATION

Cash in now on this Big Source of Extra Profit

Semak
VITAMIZER

Window and counter display material available on request

SOUTH AUSTRALIA (Continued)

P.C. C. 6.8 F. 2.6 P. 2.5.
Calories per 1 oz. .. 18.0 cals.
Lactogen 3 tablespoons and ½ teaspoon.
Sugar .. .. .. 1¼ teaspoons
Boiled water .. .. .. 7¼ oz.
P.C. C. 7.0 F. 2.8 P. 2.8
Calories per 1 oz. .. 19.5 cals.
Use Lactogen Measure Spoon.
3 tablespoons and 2 teaspoons = 1 oz.

THE GUILD

S.B.C. Meeting

At the Guild State Branch Committee meeting held on September 9 there were present Messrs. V. L. Mitchell, Walter C. Cotterell, J. D. Garrett, H. G. Collyer, G. K. F. Scott, A. C. Holloway, A. A. Russell, E. L. Miller, R. R. Patrick and the Secretary.

Appointment of Officers.—Resolved that the following positions in the State Branch Committee be filled as under:—

President: Mr. Walter C. Cotterell.

Vice-President: Mr. H. G. Collyer.

Treasurer: Mr. E. L. Miller.

Federal Delegate: Mr. Walter C. Cotterell.

Pricing Officer: Mr. A. A. Russell.

Sub-Committee: Messrs. Russell, Holloway and Scott.

Executive Committee: President, Vice-President, Treasurer, Messrs. Scott and Mitchell, and the Secretary.

New Committeeman.—The Returning Officer (Mr. A. A. Russell) advised the Committee of the result of the poll recently taken, at which Mr. R. R. Patrick was elected. Mr. Patrick was welcomed to the Committee, and suitably responded.

Federal Delegate's Report.—The Federal Delegate, Mr. Walter C. Cotterell, gave a general resume on the following matters:—Renmark Pharmacists; Visit of Federal President and Public Relations Director to Queensland; Guild Merchandising Service and Southern Drug Co.; Doctors' Surgery Supplies and Alterations to P.B.A., etc.; Removals from P.B.A. Lists; Alteration to Prices; Automatic Adjustment of Dispensing Fees; Taxation of Friendly Societies; Ceiling Prices, Particularly with Regard to Back-yarders.

Pricing Officer's Report.—The retiring Officer and the new Officer gave a general resume of price alterations.

Financial.—The Financial Statement was presented and approved, and accounts totalling £53/12/7 were passed for payment.

General.—Mr. Miller raised the question re storer cutting prices of "Disprin." Secretary to make enquiries.

Re dual offer by Chesebrough's supplying combs with "Vaseline" Hair Tonic. Secretary to take this matter up with Federal Merchandising Manager.

Re Mutual Hospital Association.—It would appear that this institution coupled the name of the Guild in a paper advertisement without the knowledge or authority of the Guild. Secretary to take this matter up with them forthwith.

Members present could not quite understand the recent offer by Australian Cellucotton Products. Secretary to arrange for the company's representative to call on all Committee members.

WESTERN AUSTRALIA

PERSONAL *and* GENERAL

State News

Mr. T. D. H. Allan spent a few days holidaying at Kojonup last month.

Miss B. L. MacIntosh is assisting Mr. R. D. Edinger at his Bicton pharmacy.

Mr. R. C. Elphinstone, who was absent on account of illness last month, is now back on duty.

Congratulations to **Mr. W. J. Slaven,** of Bruce Rock, who has been appointed as a pharmaceutical officer with the rank of Flying Officer in the R.A.A.F.

Mr. L. G. Jones, of East Fremantle, left per the "Stratheden" on September 22 for a year's tour of Great Britain.

Mr. W. J. Nott appears to have quite recovered his health, and has opened an agency business in King street, Perth.

Visitors to the Council office last month included **Mr. W. J. Cornell,** of Ballarat, Victoria. Mr. Cornell is a Director of P.D.L., and the visit, which was greatly appreciated by the local P.D.L. Secretary, afforded an opportunity to discussing P.D.L. affairs as they affect Western Australia.

The many friends of **Dr. E. M. Watson** will be glad to know that he has made satisfactory progress following a sudden illness on August 23. At the time these notes were written he had been in hospital for a month, and expected to be there for another three weeks. The week from August 23 to 29 will long be remembered by Dr. and Mrs. Watson, as besides the doctor's illness it also included the wedding of their daughter Helen and a sudden appendicitis which necessitated operation on their son Tony.

Pharmaceutical Society.—At the monthly meeting of the Pharmaceutical Society held on August 28, Dr. H. W. Illingworth, a former member of the Society, gave a very interesting talk on Gynaecology. The meeting was well attended, amongst those present being Mr. J. L. B. Miller, of Donnybrook, who was in Perth on holidays at the time.

Country Visits.—The President and Registrar paid a hurried visit to chemists at Moora, Geraldton, Morowa, Goomalling and Northam last month. With the exception of extremely remote towns, such as Leonora, Norseman, Carnarvon, Meekathara and Esperance, all country chemists have now received an official visit from the President since Mr. Fitch took office in April, 1950.

Chemists on holiday last month included **Miss Iris Sandercock,** of Subiaco (Mr. R. H. Emslie relieving); **Mr. A. J. Stewart,** of Esperance (Mr. A. D. Plenderleith relieving); **Mr. Hewlett Hogben,** of Mosman Park (Mr. J. C. Cornish relieving); **Mr. F. D. Johnstone,** of Perth (Mr. J. C. Cornish relieving); **Mr. N. H. Steere,** of Perth (Mr. R. H. Emslie relieving); **Miss V. Garcia,** of North Perth (Miss A. Elsworth relieving); and **Mr. J. L. B. Miller,** of Donnybrook (Miss E. M. Youngs relieving).

Obituary.—We regret having to report the sudden death of **Mr. H. A. McCrae** on September 12. Our deepest sympathy is extended to his widow and three daughters.

Warning Issued to Chemist.—A chemist, recently convicted for attempting to defraud the Commonwealth in regard to Pharmaceutical Benefit claims, was summoned to appear before the Pharmaceutical Council on September 2 to show cause why his name should not be removed from the Register. The action was taken under Section 20 of the Pharmacy and Poisons Act. After hearing the chemist's statement, the Council

WESTERN AUSTRALIA (Continued)

issued a warning, and required him to enter into an undertaking to keep all laws relating to the practice of pharmacy, whether statutory or ethical, and to refrain from any act calculated to discredit the pharmaceutical profession. He was ordered to pay costs amounting to £6/6/-.

Students' Association.

At the September meeting of the Pharmaceutical Council a letter was received from Mr. R. E. Boylen (son of Hon. R. J. Boylen, M.L.C., chemist, of Boulder) seeking the Council's support in forming a Pharmaceutical Students' Association in Western Australia. Although the subject has been discussed unofficially for some time, this was the first official step taken in the matter.

The Council agreed to the request, and a meeting of students was held on September 17. Mr. H. D. Fitch (President of the Council) presided, and the meeting was also addressed by the Registrar (Mr. F. W. Avenell).

After some discussion it was decided to form a Students' Association. Arrangements were made for the formation of a Committee, consisting of two representatives from each year, to draft proposals re constitution, objects, etc., for submission to the next meeting, which will be convened by Mr. Boylen.

National Service Training.—After correspondence extending over some months, the Registrar has received advice that second year students who had been requested to enter camp on September 13 would not be required until Novebmer 17. This will enable them to sit for the Annual Examinations without further interruption to their studies on account of military service this year.

Indentures of Apprenticeship.—Formal business at the September Council meeting included: Cancellation of indentures of J. V. Steffanoni, and transfer of indentures of N. Wende from S. T. Samaha to J. Rowe.

THE GUILD

S.B.C. Meeting

The State Branch Committee of the Western Australian Branch of the Guild met at 51 King street, Perth, at 10.30 p.m. after the Annual General Meeting.

Present.—Messrs. G. H. Dallimore, G. D. T. Allan, R. W. C. Dalby, R. I. Cohen, A. A. Baxter, J. G. Skeahan, R. J. Healy, R. Edinger and W. G. Lewis.

Election of Officers.—The President declared the meeting open, and called for nominations of officers, the first being that of the President. Mr. Dallimore then vacated the chair, which was taken over by the Secretary. Only one nomination was received, and the nominee, Mr. G. H. Dallimore, was declared elected amid acclamation. The Secretary then handed the chair back to the President.

Vice-Presidents.—Two nominations were received, namely Mr. G. D. T. Allan and W. G. Lewis, and both were duly elected, Mr. R. W. C. Dalby regretting that he was unable to continue in his former capacity of Vice-President.

Hon. Treasurer.—Mr. R. I. Cohen was unanimously re-elected.

Federal Delegates.—Mr. G. H. Dallimore and Mr. G. D. T. Allan were elected first and second delegates respectively.

Mr. Dallimore then congratulated the members on their return to office, and expressed regret that Mr. R. Dalby, who had served as Vice-President for five years, and who had been most enthusiastic and industrious in that position, found that he was no longer able to continue. Mr. Lewis was congratulated on his election to Vice-President.

Sub-Committees.—The election of officers to the Sub-Committees of Trade and Commerce and Pricing and Window Board of Management were left in abeyance until the next State Branch Committee Meeting.

Hon. Members.—Resolved that Messrs. T. D. H. Allan, F. W. Avenell, F. T. Lorman and F. H. Neale be elected hon. members of the State Branch for the ensuing 12 months.

New Members Elected.—Messrs. Christopher Millen, of Midvale, and Brian Murphy, of South Perth.

Chlorodyne and Iodine.—Resolved that the Council be requested to investigate the sale of chlorodyne and iodine in unauthorised shops.

Labels.—Resolved that Federal Office be written to requesting stereos or blocks of "Gilseal" labels, with a view to having them printed in W.A.

Rumbles Ltd.—The Secretary reported having seen Rumbles Ltd. with regard to the error in prices for Abbotts lines.

The meeting closed at 11.30 p.m.

[The report of the September meeting of the S.B.C. is published on page 911 of this issue.—Ed.]

TASMANIA

PHARMACY BOARD

Monthly Meeting

The Pharmacy Board of Tasmania met at 65 Murray street, Hobart, on September 8, at 8 p.m.

Present.—Messrs. H. H. Pearce (President), D. R. Crisp, T. A. Stephens, L. W. Palfreyman, E. H. Shield and the Registrar.

Apprentices.—A letter was received from Mr. R. Gunton, stating that he had observed from the minutes of the meeting published in the Journal that the letter received from the final students at the last examination regarding alleged shortage in apparatus had been signed by the nine candidates, and pointed out that he had not signed this letter. The meeting decided to thank Mr. Gunton for drawing attention to this error.

Apprenticeship Enquiry.—Submissions made by the Students' Association at the apprenticeship enquiry were received.

Examinations.—It was decided that a meeting of Examiners should be held on October 6, and that the date of conducting the examinations be co-ordinated with the Technical College.

Syllabus.—A copy of the minutes of the State Advisory Committee to Pharmacy together with the proposed Pharmacy Course and syllabus was received.

The meeting decided that the Superintendent of Technical Education be requested to ask the Registrar of the University if the examinations for the first-year course would entitle a student to the matriculation certificate.

Members decided that further consideration of this syllabus should be postponed until the Pharmaceutical Society had fully considered the details.

Pharmaceutical Register.—James Buckley (ex Victoria) was registered.

Finance.—After accounts had been passed for payment, Mr. Pearce stated that he had communicated with the Manager of the Commercial Bank of Australia Ltd., who had agreed to grant an overdraft to the Board to carry over to the end of the year. Members agreed to this in preference to withdrawing money from the Hobart Savings Bank account. Mr. Pearce also suggested that £200 from the Savings Bank account should be invested in Commonwealth Loans. The arrangement for this was left with Mr. Pearce in conjunction

HILLCASTLE ANNOUNCE NEW RETAIL PRICES!

Following on the recent reduction in sales tax Hillcastle Pty. Limited is pleased to announce new retail prices for all proprietary products distributed by this Company, and a complete new price list is set out below:—

PRODUCT	Wholesale selling price.	Price to be charged by wholesaler or retailer where 2½% is allowed.	Sales Tax.	Retail price.
		Doz.		Ea.
Camilatone Beauty Shampoo —8 shades	7/10 Doz.	8/1	33⅓	1/2
Camilatone Colour Tonrinz —8 shades	3/11 Doz.	4/1	33⅓	0/7
Camilatone Shampoo, Tonrinz or Assorted—**Quantity Price**	1 Gross Less 5% 5 Gross Less 7½% 10 Gross Less 10%			
Camilatone Lustrset (Tonic Hair Fixative Dressing)	22/- Doz.	22/7	33⅓	3/4
Quantity Prices	3 Dozen Less 2½% 6 Dozen Less 5% 12 Dozen Less 7½%	—		
Cedel No. 1 Soap	17/6 Doz.	17/11	12½	2/3
Cedel No. 2 Soap	9/- Doz.	9/3	12½	1/3
Eugene Actogene Hair Conditioning Cream	17/- Doz.	17/5	33⅓	2/8
Quantity Prices	3 Dozen Less 2½% 6 Dozen Less 5% 12 Dozen Less 7½% 60 Dozen Less 10%			
Hillcastle Hair Lacquer, 1 oz.	22/- Doz.	22/7	33⅓	3/4
Hillcastle Hair Lacquer, 2 oz.	42/- Doz.	43/1	33⅓	6/4
Hillcastle Hair Lacquer, 4 oz.	66/- Doz.	67/9	33⅓	9/11
Eugene Chatelet Hair Friction (Hair Perfume)—9 perfumes	19/6 Doz.	20/-	33⅓	3/1
Quantity Prices	3 Dozen 18/6 Doz. 6 Dozen 17/6 Doz. 12 Dozen 16/6 Doz.			
Hillcastle Hair Pencils—7 shades	42/- Doz.	43/1	33⅓	6/3
Quantity Prices	3 Dozen Less 5% 6 Dozen Less 7½% 12 Dozen Less 10%			
Selset Setting Lotion, 8 oz.	20/6 Doz.	21/-	33⅓	3/5
Hillcastle Mauve Rinse, 2 oz.	21/- Doz.	21/7	33⅓	3/3
Hillcastle Blue Rinse, 2 oz.	21/- Doz.	21/7	33⅓	3/3
Hinds Honey and Almond Cream, small	13/- Doz.	13/4	33⅓	2/-
Hinds Honey and Almond Cream, large	24/6 Doz.	25/2	33⅓	3/8
Quantity Prices Small, large or assorted	3 Dozen Less 2½% 6 Dozen Less 5% 12 Dozen Less 7½% 36 Dozen Less 10%			
Inecto Hair Dye, small	47/- Doz.	48/1	33⅓	7/3
Ordinary and Rapid	39/- Doz.	40/-	33⅓	6/-
Danfree				
Odorono—				
No. 305 trial size, Regular Red	16/- Doz.	16/5	33⅓	2/5
No. 315 trial size, Instant White	16/- Doz.	16/5	33⅓	2/5
No. 325 small size, Cream	16/- Doz.	16/5	33⅓	2/5
No. 301 small size, Regular Red	28/6 Doz.	29/3	33⅓	4/3
No. 311 small size, Instant White	28/6 Doz.	29/3	33⅓	4/3
No. 321 large size, Cream	28/- Doz.	29/3	33⅓	4/3
No. 341 Odorono Spray Deodorant		42/7	33⅓	6/2
Quantity Prices	3 Doz. Less 2½% 12 Doz. Less 7½% 36 Dozen Less 10%			
Peggy Sage Nail Polish	42/8 Doz.		33⅓	6/4
Peggy Sage Shimmering Nail Polish	60/- Doz.		33⅓	8/11
Peggy Sage Satinbase	42/8 Doz.		33⅓	6/4
Peggy Sage Cuticle Remover	42/8 Doz.		33⅓	6/4
Peggy Sage Polishield	42/8 Doz.		33⅓	6/4
Peggy Sage Manicure Pil	42/8 Doz.		33⅓	6/4
Peggy Sage Polish Remover	36/6 Doz.		33⅓	5/5
Peggy Sage Gardenia Liquid Hand Cream	64/6 Doz.		33⅓	9/7
Peggy Sage Bouquet Hand Lotion	64/6 Doz.		33⅓	9/7
Peggy Sage Hand Smoothner and Softener Cream	64/6 Doz.		33⅓	9/7
Peggy Sage Hand Massage Cream	64/6 Doz.		33⅓	9/7
Peggy Sage Hand Cream	64/6 Doz.		33⅓	9/7
Hillcastle Lemon Cream, 20 oz.	5/9 ea.		33⅓	10/9
Hillcastle Jasmin Massage Cream	5/9 ea.		33⅓	10/9
Hillcastle Jasmin Vanishing Cream	5/9 ea.		33⅓	10/9
Griptight Dolly Need Sets, No. 1	43/- Doz.		20	8/11
Griptight Dolly Need Sets, No. 2	65/6 Doz.		20	8/11
Griptight Feed Teats, No. 3016	3/9 Doz.		12½	0/6½
Griptight Feed Teats, No. 3316	3/9 Doz.		12½	0/6½
Griptight Feed Teats, No. 3616	3/9 Doz.		12½	0/6½
Griptight Feed Teats, No. 5120	5/- Doz.		12½	0/9
Griptight Feed Teats, No. 5520	5/- Doz.		12½	0/9
Griptight Feed Teats, No. 5620	5/- Doz.		12½	0/9
Griptight Feed Bottles, 8 oz., 1 hole (complete)	22/3 Doz.		12½	3/-
Griptight Feed Bottles, 8 oz., 1 hole (no brush)	20/- Doz.		12½	2/9
Griptight Soothers No. 86D	9/3 Doz.		12½	1/3
Griptight Soothers No. 86W	9/3 Doz.		12½	1/3
Griptight Soothers No. 137A	7/6 Doz.		12½	1/-
Quantity Prices	Order value £2/10/- Less 5% Order value £5 Less 10% Order value £10 Less 15%			

HILLCASTLE PTY. LTD.

SYDNEY ..... 345 Kent Street, BX 2151
MELBOURNE ..... 277 Flinders Lane, Cent. 4084
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ADELAIDE ..... 24 Charles Street, W 2816
PERTH ..... 931a Hay Street, B 7231
HOBART ..... 4 Victoria Street, Hobart 3511
and NEW ZEALAND

H.T. 11

TASMANIA (Continued)

with the giving of security to the Commercial Bank for the overdraft.

Government Grant.—Mr. Crisp reported that he had received a letter from the Chief Secretary, advising that the Board's request for additional finance for carrying out inspections under the Pharmacy Act had been considered and that the sum of £350 had been placed on the estimates for this purpose.

Annual Registration Fees.—Following consideration of the deficiency in the finances discussed at the previous meeting, the following annual registration fees were considered necessary to balance the budget, and it was decided to submit these to the Governor-in-Council for approval:—

Temporary registration for three months—£1/10/-.
Temporary registration for second three months—£1/10/-.
After six months a renewal for the remainder of the year—£2/5/-.
Full annual registration—£5/5/-.

Apparatus in Pharmacies.—As details had not yet come to hand regarding the requirements in England, it was decided to defer this matter until the next meeting.

Narcotics.—A letter from the Public Health Department, Hobart, regarding Heroin and Pethidine, was received, and it was decided to reply stating that the use of Heroin, except on prescription of a duly qualified medical practitioner, was now prohibited in Tasmania, and that the requirements in the Poisons Act regarding the use of Pethidine were being carried out. Any increase in the use of this drug should be reportd to the British Medical Association.

Rodenticide 1080.—A letter was received from the Department of Agriculture, suggesting some control should be exercised over Sodium Monofluroacetate. The meeting decided that this matter came within the province of the Stock Medicines Board.

Heroin.—The proclamation giving effect to the Board's request for the control of Heroin was received from the Chief Secretary.

THE GUILD

Annual Meeting

The 24th Annual General Meeting of the Tasmanian Branch of the Guild was held at the Y.M.C.A. Rooms, Hobart, on August 28, 1952, at 8 p.m.

Present.—Mr. L. W. Palfreyman (Chairman), Mrs. Wolnizer, Miss M. E. Williams, Messrs. J. H. Gould, K. H. Jenkins, D. R. Crisp, J. B. Warland-Browne, G. S. Copeland, G. A. Calver, E. H. Shield, G. M. Fleming, W. G. Webb, F. J. Holder, C. B. Dillon, T. A. Stephens, C. A. Robertson, A. G. Gould and the Secretary.

The Chairman extended a welcome to all and expressed pleasure at the attendance of three Northern members, who had come to Hobart specially for the meeting.

The minutes of the 23rd Annual General Meeting, held on August 23, 1951, were read and confirmed.

President's Report.—The report having been circulated, was taken as read, and Mr. Palfreyman, in moving the adoption of the report, expressed satisfaction with the 100% financial members. He stated subscriptions for the current year were coming in earlier than before. He elaboratd on items as set out in the report, and stressed the urgent necessity to back Guild contract lines. The need for chemists to stock only chemists' lines and not to trade in lines of other merchants was of great importance. He stated that the committee looking into this aspect intended to actively specify lines which were considered not to be chemists' lines, and it was hoped that all members would follow the guide of this committee.

Mr. Crisp, in seconding the motion, expressed the feeling that the Branch was in a very sound position, and that the deficit in finances was more than offset by the increased enthusiasm shown by Northern members. Mr. Dineen and Mr. J. B. Warland-Browne had done an excellent job in the North. The loss of Mr. Brammall was a severe blow to the State Branch Committee, which he had led most efficiently over the past two and a half years, and the work done by Mr. Palfreyman as Federal delegate had been of considerable value to the Branch.

Mr. Browne thanked the Chairman and Mr. Crisp for their remarks regarding the Northern Sub-Branch, and assured all that Northern members appreciated the interest shown for the Northern activities.

The report was adopted.

Financial.—The financial report having been circulated was taken as read and Mr. Jenkins, in moving its adoption, stated that expenses had been carefully watched during the year. Judging by the way the new ten guinea subscriptions were coming in members were satisfied with the results achieved.

Mr. Stephens, in seconding the motion, stated that all realised the necessity for increased expenditure, and that the larger portion of expenses was in the secretarial duties, but members realised that it was now impossible for this work to be done in an honorary capacity as in years past. He expressed appreciation of the efficient way in which the secretarial duties were being conducted.

The financial statement was adopted.

State Branch Committee.—The result of the election for the appointment of seven members to the State Branch Committee for the ensuing two years was read by the Secretary, and the President declared the following members elected:—

Messrs. L. W. Palfreyman, K. H. Jenkins, C. B. Dillon, A. G. Gould, J. B. Warland-Browne, F. H. Cartledge, W. D. Rumney.

The Chairman expressed pleasure at the number of candidates who had come forward and hoped that the three members who were not appointed this election would come forward again when nominations were called for next year.

Joint Meeting.—Mr. J. B. W. Browne stated that members would like to have another meeting at Campbell Town this year before Christmas, and a meeting at Ulverstone, about February or March, 1953.

This matter was left for further consideration of the State Branch Committee.

Wages Board.—Mr. Robertson stated that the Branch had two representatives on the Wages Board, who were there to bring forward any items which members thought should be considered in connection with the award, and as a meeting would be held shortly, he asked that members submit items for consideration at an early date.

The meeting closed at 10 p.m., and members proceeded to Mr. J. H. Gould's residence, where supper was served.

EXECUTIVE MEETING.

The Executive of the Tasmanian Branch of the Guild met at 73 Liverpool street, Hobart, on September 18, at 8 p.m.

Present.—Messrs. L. W. Palfreyman (Chairman), J. H. Gould, G. M. Fleming, K. H. Jenkins, C. B. Dillon, C. A. Robertson, T. A. Stephens, A. G. Gould, D. R. Crisp, and the Secretary.

The Chairman welcomed Mr. A. G. Gould to his first Executive meeting.

Election of Office-Bearers.—Mr. Palfreyman vacated the chair, and the Secretary called for nominations for

TASMANIA (Continued)

the position of **President** for the ensuing year. **Mr. L. W. Palfreyman** was unanimously re-elected.

The following office-bearers were elected:—

President: Mr. L. W. Palfreyman.

Vice-Presidents: Messrs. D. R. Crisp and J. B. W. Browne.

Treasurer: Mr. K. H. Jenkins.

Federal Delegate: Mr. L. W. Palfreyman.

Deputy Federal Delegate: Mr. G. S. Copeland.

Secretary: Mr. D. W. Tapping.

Auditors: Messrs. Bumford and Walter.

Sub-Committees.—The following sub-committees were elected for the year 1952-53:—

Merchandising: Messrs. K. H. Jenkins (Convenor), G. M. Fleming, A. G. Gould.

Pricing: Messrs. C. B. Dillon (Pricing Officer and Convenor), C. A. Robertson, A. G. Gould.

Social: The meeting decided that committees should be appointed for each function as required.

Public Relations and Publicity: Messrs. C. A. Robertson (Convenor), L. W. Palfreyman, D. R. Crisp, J. H. Gould.

Finance: Messrs. D. R. Crisp (Convenor), K. H. Jenkins, T. A. Stephens.

Pharmaceutical Association Liaison Committee Representatives: Messrs. L. W. Palfreyman, J. B. W. Browne.

Editor "Gilseal News": Mr. J. H. Gould.

Chamber of Commerce Representative: Mr. J. H. Gould.

Health Council Representative: Mr. C. A. Robertson.

"Gilseal News."—The desirability of having a Federal "Gilseal News" in place of individual State publications was discussed, and members considered that such a move was desirable, provided local news was maintained, and that the Public Relations and Publicity Sub-Committee should be responsible for the forwarding of items for publication.

The meeting decided that the following remit be forwarded for the next Federal Council meeting:—"That the Federal Council consider ways and means of publishing a Federal 'Gilseal News' in lieu of the present State 'Gilseal News'."

Contract.—The President reported that, following the 'phone request from A.P.P.M., for the Guild to again consider making the bottle the responsibility of the patient, the members concerned had been written to setting out details together with the decision of the Annual Meeting to press for the inclusion of the container cost in the agreement.

Price Control.—Acknowledgment of our request for decontrol of dispensing fees was received from the Prices Commissioner, advising that the matter would be discussed at the next Commissioners' conference.

New Member Elected.—Mr. James Harold Stutter, of Williams street, Westbury.

Price Lists.—The President pointed out that to date no definite arrangements had been made with members for the new pricing lists and amendments service.

The meeting decided that as actual costs were not yet known the matter should be held over until after the Federal Council Meeting.

Bottle Prices.—The President reported that some recent prices received by the Secretary showed that the price list for containers required revision, and the matter was handed to the Pricing Sub-Committee to finalise.

The meeting closed at 11 p.m.

COMMONWEALTH

PERSONAL *and* GENERAL

DRUG SUPPLIES

QUESTIONS AND ANSWERS IN PARLIAMENT.

A number of questions have been asked in Parliament during the past few weeks concerning supplies of drugs available in Australia and the availability of some under the Pharmaceutical Benefits Act.

The questions and the answers given, as reported in Hansard, are published below:

PENICILLIN.

(House of Representatives, August 14.)

Mr. Edmonds.—Will the Minister for Health inform me whether it is a fact that a complete embargo has been placed on the importation of penicillin into Australia, and that supplies of this indispensable drug are to be drawn from the Commonwealth Serum Laboratories? Has it come to his knowledge that certain sections of the medical profession and chemists have expressed the fear that this embargo will result in a shortage of penicillin, because they believe that the Commonwealth Serum Laboratories have not the physical capacity to provide all of Australia's requirements of the drug? Will the Minister give to the House a complete assurance that the embargo on the importation of penicillin will not have that effect to which I have referred, and that ample supplies will be available for our requirements?

Sir Earle Page.—I am continually in touch with the medical profession and with the advisory committee that handles this matter, and I have not received any complaints of the kind to which the honourable member has referred. I assure him that the position is always under proper review.

LIVER EXTRACT.

(House of Representatives, August 12.)

Mr. Andrews.—Will the Minister for Health inform me whether it is correct that oral liver extract, which was included in the free list of medicines for use by patients suffering from pernicious anaemia, has been removed from the list because it was being prescribed for general use as a tonic? Is there a chance that the medicine might be returned to the free list if its use is limited to persons suffering from chronic anaemia" From information that I have received, such medicine costs patients approximately 45/- a bottle. As an alternative, an injection of liver extract may be had weekly at a cost of 15/-.

Sir Earle Page.—This medicine was removed from the free list because it is considered that it is not a life-saving drug. Provision has been made, under the pharmaceutical benefits scheme, for the free supply of other medicines containing liver extract, which may be used hypodermically.

MYSOLINE AND CORTISONE.

(House of Representatives, August 12.)

Mr. Davies.—I desire to ask the Minister for Health a question about a new British drug, called mysoline, which has been found valuable against epilepsy. Is it a fact that this drug has been tried on 48 patients in England, and that 12 of them have been freed of fits, 20 have been improved, and only eight have not been improved? Is it also a fact that the "Medical Journal of Australia" has stated that a notable improvement in the control of major epilepsy will have been achieved if these results are confirmed by more extensive trials" If those are facts, will the Minister consider the ad-

COMMONWEALTH (Continued)

visability of having quantities of the drug brought to Australia for the purpose of helping to cure the many thousands of people here who are suffering from epilepsy?

Sir Earle Page.—The Department of Health, through the National Health and Medical Research Council, is in constant touch with research bodies in the United Kingdom and the United States of America about new medical discoveries. It is considered that many experiments with new drugs can be conducted to better advantage in places where large numbers of patients exist, before the drugs are tried in Australia.

Mr. Falkinder.—Can the Minister for Health inform me whether supplies of cortisone for the treatment of arthritis are increasing in Australia? Has the cost of manufacturing the drug been substantially reduced by the adoption of any new processes? Have there been any further developments overseas with allied drugs that may be effective in combating this kind of disease?

Sir Earle Page.—Our experience of cortisone has not been satisfactory. The results that have been obtained have been short lived, and there has been a recurrence of symptoms in many cases. The conditions that were imposed last year, under which the use of cortisone is controlled by leading scientists in Australia, are being continued.

ISONICOTINIC ACID.

(House of Representatives, August 7.)

Dr. Donald Cameron.—Experiments in the treatment of tuberculosis with compounds of isonicotinic acid are now being conducted in the United States of America. Will the Minister for Health say whether supplies of these drugs are available in this country? Are the costs of production high? Is any experimental clinical work upon their use being undertaken in this country? Is it correct to say that the treatment of tuberculosis with these drugs is still in the experimental stage, and that, despite very promising and much publicised results, it would be misleading to give the impression that a radical change in the treatment of this disease is at hand?

Sir Earle Page.—Isonicotinic acid is being used very freely in the United States of America. It is available in Australia at a fairly low cost. In this country the drug is being used only in experimental work conducted by the Directors of Tuberculosis in the States and by some highly qualified and esteemed tuberculosis specialists. Our present knowledge of the use of the drug both here and overseas shows that, in the treatment of tuberculosis, it is only in the experimental stage, and should not replace ordinary methods of treatment.

NEW SOUTH WALES

PERSONAL *and* GENERAL — *State News*

Mr. Alan N. B. Percival has opened a pharmacy at 186 Canary road, Beverley Hills, N.S.W.

THE SCIENCE GROUP.

The Science Group met at "Science House," Sydney, on September 19, at 8 p.m. The meeting was well attended to hear a paper entitled "Some Difficulties Associated with the Dispensing of Surface Active Agents" by G. Eckert and C. Griffiths, from the Sydney University Pharmacy Department. This paper was read at the recent A.N.Z.A.A.S. Conference in Section "O" programme, and was presented and further elaborated to the Group by Mr. Eckert.

Considerable discussion took place at the conclusion of the lecture.

The next meeting of the Group will take place on October 17 at 8 p.m.

MURDER CHARGE SUSTAINED.

Ban on Thallium Recommended.

In the Central Criminal Court, Sydney, on September 23, Mrs. Yvonne Gladys Fletcher, 30, was sentenced to death for the murder of her first husband, Desmond George Butler, 30, by administering thallium poison.

The jury returned a verdict of guilty after an absence of four hours.

Mr. Justice Kinsella, who presided at the trial, referred to a recommendation from the jury that, in view of the scientific evidence, the sale of thallium poison in any form to the public should be prohibited.

He said he would pass on the recommendation to the appropriate authority.

A legal authority said in Sydney at the time the jury's verdict was announced that this was the first case known in Australia of a person having been convicted of murder by administering thallium poison.

Minister Making Enquiries.

The Minister for Health, Mr. M. O'Sullivan, said on September 24 that he had asked the Crown Law Department to see whether the sale of the poison thallium should be banned.

He said that if the Department decided it could be banned, he would ask it whether the necessary legislation could be included in the amendments to the Poisons Act which will come before Parliament shortly.

VICTORIA

PERSONAL *and* GENERAL — *State News*

Mr. Y. M. Black will be opening a pharmacy at 103 Swanston street, Melbourne, about the end of October.

Mr. G. H. Cooke has been in charge of the Amcal stand at the Royal Melbourne Show.

Mr. M. S. Kennedy has accepted a permanent position at Miss I. U. Hespe's pharmacy, St. Kilda.

Miss M. Noonan has accepted a permanent appointment with Mr. A. V. E. Coates, Melbourne.

Miss M. J. Snowball has accepted a permanent position with the Friendly Society's Medical Union at Townsville, Queensland.

Mr. Leo Scott was relieving at the pharmacy of Messrs. McGibbony and Beaumont, Collins street, Melbourne, for a fortnight, from September 1.

Mr. E. H. Leete was a speaker in the broadcast session "Fifty and Over" from Station 3UZ, Melbourne, on the evening of Sunday, September 21. Mr. Leete was born at Kyneton in 1870, and he had many interesting experiences to relate of the Kyneton district and personalities of his boyhood days. In his early years after qualifying as a pharmaceutical chemist he managed a pharmacy in Fitzroy (later becoming proprietor), and in the period following the bursting of the land boom of the '90's he built up the average week's takings from £12 to £13! On a Saturday, working from 7.30 a.m. until 11.30 p.m., he would serve perhaps 100 customers, most of the transactions being for 6d. or less, and the day's takings amounting to £4. They were hard times indeed. Mr. Leete spoke clearly, with a steady voice, and any listeners not knowing his age could easily have taken him for a man 30 years younger. Mr. Leete is a former Councillor of the Pharmaceutical Society of Victoria and one of the founders of Sigma Co. Ltd.

VICTORIA (Continued)

MANAGERS AND RELIEVERS.

The following relieving appointments were notified during the month:—

Miss C. Allen for Mr. M. S. Efron, Elsternwick; **Mrs. V. H. C. Aitchison** for Mr. F. G. A. Long, Mont Albert; **Mr. E. N. Boyce** at Lee & Son's pharmacy, Prahran (indefinitely); **Mr. J. Bell** for Mr. W. F. Carroll, Princes Bridge (three weeks); **Mr. H. Dixon** for Mr. J. S. R. Barker, Castlemaine (two weeks); **Mr. F. F. Eddie** for Mr. L. McD. Wallis; East Malvern (two weeks); Mr. D. A. **Emonson** for Mr. T. H. Davis, Ivanhoe (one week); **Miss L. Evans** for Mr. C. H. M. Bennett, Balaclava; **Mr. A. P. Fry** for Mr. A. M. McFarline, Sale, and Mr. H. H. Vail, Cranbourne; **Mr. J. Ferguson** for Mr. T. P. Keogh, Tallangatta, and Mr. G. Hutcheson, Kyabram; **Mr. L. F. Gurry** for Mr. V. R. H. Weymouth, Heyfield (three weeks); **Mr. F. A. Guenther** for Mr. R. H. Straker, Hawthorn; **Mr. H. Harper** for Mr. A. V. Huntsman, Brighton Beach, and Mr. L. R. C. Smith, Leongatha; **Mr. J. Haig** for Mr. K. F. Gardiner, Coburg, and Mr. H. W. Lewis, Brunswick; **Miss B. E. Homburg** for Mr. J. J. Burston, Ararat; **Mr. O. Higgins** for Mr. G. K. Thomas, Warrnambool; **Mr. L. Holstock** for Mr. J. S. McNamara, Ringwood (three weeks); **Mr. M. Kelleher** for Mr. J. Buckley, Ascot Vale, Mr. J. Ray Gardiner, and Mr. N. R. Reeve, Toora; **Mr. J. A. Kruse** for Mr. A. C. Taylor, Seddon (two weeks); **Mr. B. L. Jacobson** for Mr. Doreian, Mitcham, Wallace & Co., North Melbourne, and Mr. J. Lee, Rushworth; **Miss N. Jones** for Mr. A. W. Marriott, Collingwood (two weeks); **Mr. M. H. Lawson** for Mr. J. Grainger, Malvern; **Mr. T. King** for Miss N. Downton, Brighton, Mr. D. McK. Hutchinson, Moorabbin, and Mr. A. H. Mansell, Glenferrie; **Mr. H. S. Lamb** for Mr. J. H. Weymouth, Trafalgar; **Mr. F. A. Kelley** at Belleville's Pharmacy, Balaclava; **Mr. W. Knell** for Mr. R. T. Benton, Alphington; **Mr. J. W. Miller** for Mr. N. R. Reeve, Toora, and at Ford & Co.'s pharmacy, Toorak; **Miss D. J. Paton** for Mr. A. J. Jenkins, and Mr. J. H. West, Mildura, and Mr. E. J. Dean, Red Cliffs; **Mrs. H. D. Pout** for Miss Hornsey, Moonee Ponds; **Mr. G. H. B. Revell** for Mr. J. Buckley, Ascot Vale (indefinitely); **Mr. P. L. Scott** for Messrs. McGibbony & Beaumont, Melbourne, and Mr. G. Huppert, St. Kilda; **Miss B. Schumacher** for Miss H. R. McIntosh, Darling, and Mr. R. H. Mercer, Corryong; **Mr. J. Shannon** for Mr. J. I. Richards, Melbourne; **Miss M. Smith** for Mr. A. V. E. Coates, Melbourne (two weeks); **Mr. G. Tait** for Mr. S. F. Byrnes, Preston, and Mr. D. Cain, Melbourne; **Mr. J. K. Trinder** for Mr. C. H. Semmens, Sandringham, Mr. A. S. Cattanach, Spotswood, and Mr. I. A. Silverwood, Edithvale; **Mr. W. J. Taylor** for Mr. E. Taylor, Bendigo, and at Morrow's Pharmacy, Daylesford; **Miss Todd** for Mr. H. L. Kittle, Highett; **Mrs. M. L. Vessey** for Mr. G. W. Siebler, Abbotsford, and F. Tattam, East Kew; **Miss J. G. Wignall** for Mr. H. S. Cope, Ascot Vale (two weeks); **Mr. W. D. Wheeler** for Mr. K. Beynon, Bairnsdale, Mr. A. T. Chong, Bentleigh, Repatriation Hospital, St. Kilda road, Melbourne, and Mr. L. C. Hall, Donald; **Mr. F. M. Wheaton** for Mrs. M. Bond, Wycheproof; **Mrs. Whamond** for Mr. J. W. Dammery, North Melbourne; **Mr. H. H. Wood** for Mr. D. G. Mitchell, Chelsea; **Mr. L. G. Woolcock** for Mr. B. P. Dartnell, South Melbourne; **Mr. I. C. Wood** for Mr. R. B. Billings, Koroit (two weeks); **Mr. R. Younger** at Dr. Singleton's Dispensary, Collingwood.

NEW PHARMACIES AND BUSINESS CHANGES.

Mrs. R. Baer (nee Goldberg) has opened a pharmacy at 144 Melville road, Pascoe Vale South.

Mr. and Mrs. J. B. Norton have purchased Mr. M. I. Larkin's pharmacy at Heathcote.

Mr. James Buckley has opened a pharmacy at 67 Union road, Ascot Vale.

Mr. A. W. Fussell has opened a pharmacy at 166 High street, Wodonga.

Mr. J. B. Daly has opened a pharmacy at 363 Buckley street, West Essendon.

Mr. E. W. Waters has purchased Mr. W. J. A. McMillan's pharmacy, Kerang.

Mr. P. S. Mylecharane will open a pharmacy at Riversdale road, Box Hill (Wattle Park) shortly.

Visitors to United Kingdom.—Victorian pharmacists planning to leave on extended trips to Great Britain early in the new year are Miss Helen M. Hovendene and Miss M. E. A. Brooke, who conducts a pharmacy at Glenferrie.

Engagement.—The engagement is announced of Barbara Helen Davies, Ranfurlie crescent, Glen Iris, to Keith Graham Smith, 99 Pleasant road, Upper Hawthorn. Miss Davies, who qualified in 1948, is on the staff of Bradley's Pharmacy, Bourke street, Melbourne, whilst Mr. Smith, who qualified in 1950, is with Buckhurst's Pharmacy, at Camberwell. Congratulations.

OBITUARY.

Robert Albert Moore.

We regret to announce the death of Mr. Robert Albert Moore, which occurred on August 26.

Mr. Moore qualified in 1899. He was for many years manager of the Collins street pharmacy of Henry Francis & Co. Mr. Moore was keenly interested in accountancy and allied subjects, to which he devoted much study. He was a member of both the Federal and Commonwealth Institutes of Accountants, and held qualification as a cost accountant. He was also a commissioner for taking affidavits.

In recent months several articles submitted by Mr. Moore were published in this Journal.

Mr. Moore retired from active business a few years ago because of failing health.

Herbert Charles Morieson.

We deeply regret to announce the death, at the age of 52, of Mr. Herbert Charles Morieson, which occurred suddenly on September 16.

Mr. Morieson qualified at the Victorian Final Examination in December, 1921. He conducted pharmacies at Glenferrie and Camberwell, and was actively engaged in business until the time of his death. Mr. V. G. Morieson, of Malvern, President of the Federal Council of Pharmaceutical Societies of Australia, is a brother.

A large number of relatives, friends and representatives of pharmaceutical and other organisations with which Mr. Morieson was associated attended the funeral service and cremation at Springvale.

FINAL EXAMINATION.

List of Passes.

The following candidates passed at the September Final Examination conducted by the Pharmacy Board:—Thomas Dixon Adamson, Joseph Kiers, Charles Patrick O'Loughlin, John Ernest Bullock, Donald Raymond Currie, Noel Herbert Hunt, Douglas Peel Arthur Mayson, Kevin O'Brien, Geoffrey Alfred Saunders and Maureen Wilson Stewart.

RED CROSS HONOURS COUNTRY MEMBER.

At the Annual Meeting of the Lang Lang Red Cross Branch held on August 21 a letter containing £10 was received from an anonymous donor with a request that Mr. and Mrs. Maurice Super, of Lang Lang, be made Life Members of the Lang Lang Red Cross Branch in appreciation of their work for the district over a number of years. The thanks of the Branch were published in the "Kooweerup Sun" on September 10, together with congratulations to Mr. and Mrs. Super.

It is pleasing to report honours such as this to members who contribute their time and talents to movements for the benefit of the community they serve. Mr. Super has been actively engaged in the work of the Church of England, the R.S.L., Progress Association, War Memorial Committee and other local movements.

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GUILD ENTHUSIASM AT MILDURA MEETING.

Visit by Messrs. Scott, Iliffe and Attiwill.

Messrs. Eric Scott (Federal President), W. R. Iliffe (State President) and Keith Attiwill (Federal Public Relations Director) addressed a largely-attended meeting of the Mildura and District Chemists' Association at the Grand Hotel, Mildura, on August 6.

Mr. Newton Thompson, Chairman of the Association, presided, and the following attended:—

Mr. and Mrs. H. O. Albert, Mr. A. Ramsay, Miss Marion Ramsay, Mr. L. L. Davey (Secretary), Mr. A. J. Jenkins, Miss Ailsa Jenkins, Mr. J. H. West, Mr. E. J. Dean, Mr. R. J. Leith, Mr. V. Israel, Mr. F. G. Davison (Wentworth).

Members had prepared a list of questions for the Guild officials, and full explanations were given, to the satisfaction of the meeting.

Mr. Scott's detailed and convincing address covered such points as:

Reasons for removal of sulphadiazine from the broken tablet table;

Protection for chemists in the supply of doctors' emergency stocks;

Negotiations with Canberra to abolish present P.M.S. averaging system;

Steps to stop removal and alteration of lines;

Dispensing fee negotiations with Canberra;

Ceiling prices on the P.B.A. list.

Mr. Scott said that events had proved the necessity for an efficient Guild organisation, the retail chemists' only protection against the potential dangers of a national health scheme.

Mr. Iliffe also gave a full and interesting survey of Victorian branch activities throughout the year. He dealt with the Guild fee-for-service system for lodge members; Nyal in dispensaries; service to chemists in border towns; the Welcome Waggon minus Guild blessing; chemists and the Victorian Health (Patent Medicines) Act; and the Guild price list.

Mr. Attiwill's account of Guild political activity on many fronts throughout Australia was a stimulating proof of the results of Guild loyalty and appreciation of the value of public relations.

Mr. Jenkins proposed a vote of thanks to the visitors. He said that Mildura was an active and loyal Guild centre. On behalf of those present he expressed warm appreciation of the action of the three visitors in making the long trip to Mildura. The result would undoubtedly be beneficial to the members and the Guild generally.

BROADCAST BY MISS E. M. WITT.

An interview with Miss E. M. Witt, Demonstrator and Lecturer at the Victorian College of Pharmacy, was broadcast over station 3AR on September 14.

During the interview Miss Witt said that her trip was intended in the main to be a rest holiday, but being so closely connected with pharmaceutical education, she decided to take the opportunity offered of visiting as many schools of pharmacy in Great Britain as possible.

Miss Witt said that she visited several schools in Great Britain, including the School of Pharmacy of the University of London, where she worked as an observer for some weeks. This was recognised as the best pharmacy school in the British Empire. In all schools visited she found a vast difference in equipment and facilities from those available in Victoria. The British schools were well provided with laboratories for practical work, and were splendidly furnished with the most modern equipment. In addition they were well staffed and had wide facilities available for research work.

Research in both Great Britain and on the Continent was extensive. One large Continental pharmaceutical factory she visited covered many acres, and employed a large staff in research laboratories seeking new chemicals for use in medicine as drugs.

Commenting on the standard of pharmaceutical education in Great Britain, Miss Witt said it was very high. Both a Diploma Course of high standard for Pharmaceutical Chemist and a Degree Course for Bachelor of Pharmacy were available to students. In Victoria the chief problem was finance. Pharmaceutical teaching institutions in Great Britain had much greater financial resources than the Victorian authorities. Large monetary grants were provided by the Universities Commission or local Government bodies. In Great Britain one school had an annual income of £56,000 with which to train 100 students and conduct research. The Victorian College had approximately £15,000 per annum to train 550 students.

PHARMACY BOARD

Monthly Meeting

Abstract of Minutes of meeting of the Pharmacy Board of Victoria held on September 10.

Present.—Mr. S. J. Baird (President) in the Chair, Messrs. H. A. Braithwaite, A. W. Callister, W. R. Iliffe, N. C. Manning, A. W. McGibbony, W. Wishart and F. C. Kent (Registrar).

Prescription Records.—Further consideration was given to the requirement of the Pharmacy Regulations that a Daily Work Book containing particulars set down in the Regulations should be kept in connection with contract dispensing and in cases where full records are not kept in the Prescription Book.

Reports were received concerning records in pharmacies, dispensaries and hospitals. It some instances the full requirements were not being carried out, and it was resolved that conferences be arranged with representatives of the hospital chemists and with chemists in dispensaries.

Poisons Schedules Advisory Panel.—It was resolved that an early meeting of the Panel be called to consider control of stock foods containing antibiotics, revision of Dangerous Drugs Schedule, raticides containing new poisons, etc.

Hydrogen Peroxide.—Following consideration of a report from the Health Inspectors' Association, enquiries had been made in relation to reports of bursting of bottles of Hydrogen Peroxide manufactured by a Melbourne firm. It was reported that all samples of the batch complained of had been recalled and analyses carried out. Nothing wrong with the samples had been detected. Warning labels, however, had been prepared and were now in use. It was resolved that the information be conveyed to the Department of Health, which had brought the matter to the notice of the Board.

Correspondence.—Correspondence submitted included the following:—

A letter was received from the Rochdale Branch of the Pharmaceutical Society of Great Britain concerning the forthcoming visit of Mr. Slattery, a member of the Branch, to Australia. It was resolved to co-operate with the Pharmaceutical Society in supplying information regarding pharmaceutical conditions in Victoria, which he apparently was most desirous of obtaining.

In response to a request from the Consul-General for the Netherlands, a summary of the main provisions of the Poisons Acts and Schedules was supplied.

A circular letter from the International Labour Organisation was submitted, and attention drawn to a proposal therein that wordless warning labels be attached to various categories of dangerous substances. The symbol for a poison container was a skull; for radioactive substances a label depicting a skull and cross-

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bones with a background of "R," and for corrosive substances a corroded hand.

Dangerous Drugs Licences.—The formal business included several applications for licences to sell by wholesale or manufacture dangerous drugs. Two of the applications were held in abeyance, as the requirements relating to custody and storage did not appear to be met.

Loss of Cocaine.—A report was made by the Chief Inspector concerning enquiries made in conjunction with Police Officers at a Dispensary which had reported the loss of a quantity of cocaine.

Depot for Prescriptions.—Inspector Ahern reported on enquiries made by him concerning a depot in conjunction with a Friendly Society Dispensary. As the arrangements were not in conformity with the Pharmacy Regulations, he had suggested that the arrangement be discontinued.

Breaches of the Dangerous Drugs Regulations.—The Registrar reported that in accordance with the direction given by the Board at the previous meeting, instructions had been given to the Solicitor to take proceedings in two cases in which Police reports disclosed that the provisions of the Dangerous Drugs Regulations had not been properly observed.

Mr. Iliffe said that the State Branch Committee of the Guild had expressed the opinion that explicit information should be published as to the requirements of the Regulations concerning the storage of dangerous drugs, poisons, etc. A conference with the Board had been suggested. The President said the Board would be glad to meet and discuss this and other matters with representatives of the Guild, and it was agreed accordingly.

Inspection of Pharmacies.—Reports from the Inspectors were considered. In some cases breaches of the Regulations were disclosed, and the Board directed that warnings be issued that further inspections would take place, and legal proceedings would be taken if it was then found that the warnings given by the Inspectors had not been heeded.

Final Examination Results.—Authority was given by the Board to the Executive to publish the results of the September Examination when available.

Botany Examiner.—The Registrar reported that Major Wilson had relinquished the position as Lecturer in Botany to students of the College of Pharmacy. He had been advised by the Dean that Major Wilson had found it necessary to resign his position as Examiner in Botany for the Intermediate Examination. The President and members expressed great regret at hearing of Major Wilson's illness and the necessity for his retirement as Examiner. It was resolved that the President be empowered to take whatever action was necessary for the November Examination, and that the question of a successor to Major Wilson be considered at a later meeting.

Similarity of Drug Names.—Mr. McGibbony referred to earlier discussions which had taken place on the confusion by similarity of drug names. He gave examples of names of non-poisonous substances which closely resembled those used for poisons, and suggested that the matter be discussed with the Chairman of the Health Commission. He submitted for consideration a proposal which he thought might be practical. Members of the Board expressed the opinion that many difficulties would have to be faced. They admitted the dangers existed, but felt that the matter was one which went beyond the Board's sphere. It was agreed, however, that the matter be discussed with the Chairman of the Public Health Commission as suggested by Mr. McGibbony.

The meeting then adjourned.

PHARMACEUTICAL SOCIETY — *Council Meeting*

Summary of Proceedings at Council Meeting, Pharmaceutical Society of Victoria, September 3, 1952.

Present.—Mr. I. J. Thompson (Vice-President) in the Chair, Messrs. A. L. Hull, F. W. Johnson, L. Long, V. G. Morieson, E. Scott, C. P. A. Taylor, G. H. Williams, F. C. Kent (Secretary) and T. G. Allen (Minutes Secretary).

Correspondence submitted included the following:—

Notification to the University that Dr. Byron L. Stanton had been nominated as College of Pharmacy representative on Faculty of Medicine. Confirmed.

To the Universities Commission, claiming for amount of fees due on behalf of Commonwealth Scholarship holders, and intimating that the Victorian Pharmacy Students' Association, for which a subscription of 10/- was debited, was officially recognised by the College.

Letter to Mr. F. S. T. Sare congratulating him on the celebration of his Golden Wedding and conveying the good wishes of the Council.

From the Pharmaceutical Council of Western Australia, advising that Dr. Eric M. Watson was seriously ill. Members of the Council expressed regret, and asked that a letter of sympathy be forwarded to Dr. Watson.

From the Victorian State Branch Committee of the Guild, forwarding correspondence concerning difficulty encountered by a member in regard to the supply of a cortisone preparation under Commonwealth regulations. As one of the main difficulties appeared to be that of obtaining a prescription to meet the requirements of the Specified Drugs Regulations, it was resolved that the matter be referred to the Pharmacy Board.

From the State Branch Committee of the Guild with reference to a complaint from a member concerning the action of a medical practitioner who had been approached following the writing of a P.B.A. as well as a P.M.S. prescription on the one form. It was resolved that the matter be discussed with the Commonwealth Health Authorities, and that, if necessary, the matter be taken up with the British Medical Association.

New Members Elected:

Full Members: Patricia Audrey Branson (nee Grant), Lewis William Kelly.

Transfer from Apprentice Membership: Francis Keith Bullen, Alexander Grant, Edward Albert Lansdown, Kenneth Robert Moir, Ruth Harriet Zylberberg (nee Gerson).

Annual Church Services Proposed.—A letter was received from a member, Mr. H. A. P. Ankerson, suggesting that the Council give further consideration to a proposal that annual church services be organised for the pharmaceutical profession. The Vice-President, Mr. I. J. Thompson, who is also the Chairman of the Public Relations Secretariat, said this was a matter in which the Secretariat had been interested, and he would arrange for the proposal to be further considered.

Report by Miss E. M. Witt.—The President said that a report on observations made by Miss Witt on pharmaceutical teaching in Great Britain had been received and copies were available. As time had not been available for perusal of the report before the meeting, it was decided that it be referred to the Education Committee and further considered at the next meeting of the Council.

College Rebuilding.—The Honorary Treasurer reported on a recent visit to Canberra made with the

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object of ascertaining whether funds could be made available from Commonwealth sources. An interview with the Prime Minister had taken place at which it was made clear that money could not be provided under the provisions of the Universities Grants Act. Other aspects were, however, being considered.

Correspondence with the Town Clerk, Melbourne, indicated that the Council's application for permission to erect a College on the Parkville site had been reconsidered, and that, subject to certain undertakings, it was likely that a permit would be issued. The Council expressed its pleasure at this advice, and resolved that a conference with the architect should be arranged before undertakings were entered into.

Alterations to Biology Room.—The President reported that attendance of medical students on four days a week during February necessitated provision of additional lecture room accommodation, as College classes would have to be accommodated as well during that period.

The Chairman of the Building Committee, Mr. Baird, said that that had been discussed with the architect, who was of opinion that the present Biology Room could be converted into a lecture room. The estimated cost was approximately £800. Plans submitted would be a great improvement on present conditions. It was suggested that a check quotation should be obtained.

After some discussion, it was resolved that this matter be referred to the Building Committee.

Acoustics of Board Room.—The architects submitted a quotation for soundproofing the Board Room. The Council, however, considered the cost disproportionate to the benefits which might result from such experimental treatment, and decided that this matter also should be sent on to the Building Committee for its consideration.

Hospital Dispensing.—It was reported that there had been no development in connection with the submission of a draft agreement to the Hospitals Commission.

During the month the Chairman of the Hospital Dispensing Committee and the Secretary had attended the meeting of chemists on the Brighton Community Hospital Panel, and had also interviewed the Matron and Secretary of the Hospital concerning minor difficulties which had cropped up in connection with the service. This, they thought, had been happily resolved. The report was received.

Special Class in Practical Dispensing.—The Council approved of a proposal that a special class in Practical Dispensing should be arranged for students who had been unsuccessful at recent Final Examinations, provided the number of students desirous of attending such a class was sufficient.

Mental Hygiene Authority.—The Secretary reported that the Chairman of the Hospital Dispensing Committee, Mr. E. C. McClelland, and he had interviewed the Deputy Chairman of the Mental Hygiene Authority, Dr. C. R. D. Brothers, and had received an assurance that the Society's representations that qualified chemists should be employed for dispensing in all institutions during the absence of the permanent pharmacist would receive the sympathetic consideration of the Commission. Additional appointments were being made, and it was expected that this would provide sufficient staff to ensure that qualified persons were available for relief work. The report was received.

A.N.Z.A.A.S. Meeting in Sydney.—The Secretary submitted a brief report on the conference on Pharmaceutical Education held in Sydney following the A.N.Z.A.A.S. Conference. He said there had been very excellent exchange of information all round. A satisfy-

ing aspect of the discussion with the progress being made in Queensland towards better conditions, as indicated in a report by the Queensland representative, Mr. R. S. V. Martin. The highlight of the proceedings was an excellent outline of the position in South Australia by Professor A. K. Macbeth.

The Secretary reported also that a paper of exceptional merit on the control of proprietary medicines was submitted by Mr. George Landers, a Victorian Fourth Year student. This was followed by an interesting discussion which was featured prominently in the newspapers.

The next meeting of A.N.Z.A.A.S. had been fixed for Melbourne in January, 1955, and the Pharmaceutical Association meeting would probably be held there at the same time. The next meeting of the Association was scheduled for Sydney in August, 1953.

National Service Training.—Considerable discussion took place in regard to the position of Pharmacy students required to undertake National Service Training, particular reference being made to the requirements concerning night parades and annual camps in the three years following the 90 days' continuous training. The Secretary tabled details of students' obligations under the National Service Act, and reported on the method by which training was organised for University students in the Melbourne University Regiment. Members of the Council reached the conclusion that the fullest information should be made available to students and advice given as to the best means of fulfilling the requirements of the Act with the least interruption to studies. The Secretary said it had been made clear by the authorities that every consideration would be given in cases where study programmes or examinations would be affected.

A.P.F.—The Chairman of the A.P.F. Management Committee (Mr. F. W. Johnson) reported on the successful A.P.F. exhibit arranged at the recent Medical Exhibition held in conjunction with the 8th Australian Medical Congress in Melbourne. Mr. B. C. Hornby, the Society's A.P.F. representative, had been in charge of the exhibit, and had done an excellent job. Brochures and leaflets detailing new formulae had been prepared and distributed. Samples of a number of selected formulae had been prepared for the exhibition, and copies of medical bulletins issued were on display. A large number of these had been taken by Interstate doctors. It was gratifying to note that a number of pharmaceutical chemists also visited the A.P.F. display. The Chairman thanked Mr. Johnson for the report, which was formally received. It was resolved also that the thanks of the Council be conveyed to Mr. Hornby and a small honorarium be paid to him for the additional work involved in organising and conducting the exhibit.

Conferring of Diplomas.—Reference was made by Mr. Long to the present method of presenting Final Examination diplomas. This ceremony, he felt, could be conducted more impressively and with greater dignity. Mr. Thompson and other members supported Mr. Long in his view, and it was decided that the matter be referred to the Education Committee for recommendation.

Commercial Education in Pharmacy.—The Chairman told the Council of an interview which had taken place between Mr. Lipsham, himself and Mr. Iliffe recently. The matter discussed was the improvement of commercial education in pharmacy. As the Guild was greatly interested, it was likely that this subject would be discussed by the Federal Council. Representatives of the Guild were preparing a programme for a four-year period of commercial practice—within the pharmacy, not necessarily within the teaching institutions.

Financial.—The Honorary Treasurer submitted the monthly financial statement, and accounts totalling £2902 were passed for payment.

VICTORIA (Continued)

THE P.D.L.

Directors Meeting

At the 346th meeting of the Directors of Pharmaceutical Defence Limited, held at 360 Swanston Street, Melbourne, on September 17, there were present Mr. E. W. Braithwaite (in the chair), Messrs. W. J. Cornell, N. C. Cossar, E. A. O. Moore, F. N. Pleasance, C. C. Wallis, B. L. Warner, and the Secretary.

Amongst the correspondence dealt with were:—

1. Letters to several members in business in New South Wales, but on the Head Office Register, suggesting their transfer to the N.S.W. Branch as from October 1, 1952. Three of the five members addressed had replied, and they were agreeable to the suggestion. The N.S.W. Branch Secretary had been informed.

2. Enquiry whether damage caused by the falling of a verandah sign on to a parked car would be covered under the General Public Risk Policy. Advice from Melbourne Fire Office was that the holder of a policy would be covered in these circumstances provided he was legally liable for the damage; in some circumstances the landlord might be liable.

3. In minutes of the N.S.W. Local Board meeting held on June 25, it was noted that the N.S.W. Local Board had confirmed the decisions arrived at at the Conference between the representatives of the Directors and the New South Wales Local Board, held in Melbourne in May last, and also accepted the recommendations agreed to at that conference.

New Members Elected. — Mrs. Rachel Baer, Pascoe Vale South; John B. Daly, Essendon; Keith McK. Henderson, Mooroopna; Miss Irene M. J. MacGillivray, Essendon.

Goodwill and Taxation.—The Secretary reported on the meeting of the Committee of the Trade Associations' Federal Taxation Defence Council, when it was decided to approach the Commonwealth Treasurer, Sir Arthur Fadden, with a view to the relevant provisions in the Amending Income Tax and Social Services Contribution Assessment Act, being made to apply as from September 30, 1952, instead of December 31, 1952. The Commonwealth Treasurer had replied giving his reasons for being unable to accede to this request, and a copy of his letter would be published in the September issue of "The A.J.P." for the information of chemists generally. [See 'The Month" section of this issue.—Ed.]

Legal.—Matters referred to for legal advice during the month dealt with (a) Neon fluorescent lighting agreement (b) Leases (three enquiries). In a poisoning case, the circumstances were in order as far as the pharmacy of the member was concerned.

Articles of Association. — (a) The opinion obtained from Mr. D. I. Menzies, Q.C., was received and discussed. Further consideration of the matter was deferred.

(b) Proposed alterations to the Articles of Association to provide for a secret ballot in elections of Directors were approved, subject to legal advice on further alterations suggested at the meeting.

Annual Meeting.—Resolved that the Annual Meeting be called for November 26.

Financial.—The Hon. Treasurer's monthly financial statement was adopted, and accounts totalling £1155/0/1 were passed for payment.

The meeting closed at 1.10 p.m.

THE GUILD

Annual Meeting

The Annual Meeting of members of the Victorian State Branch of the Guild was held at 360 Swanston Street, Melbourne, on September 3, 1952, at 8 p.m.

There was an attendance of approximately 100 members, with the State President, Mr. W. R. Iliffe, in the Chair.

After the Secretary had read the notice convening the meeting, presented apologies, and had read a telegram of greetings from the Queensland State Branch Committee, the Chairman welcomed those present. He expressed pleasure at seeing a number of country members in the audience.

Minutes.—The Chairman suggested that the minutes be taken as read and confirmed. Mr. E. Scott moved and Mr. F. N. Lee seconded a motion to that effect.

Mr. S. Hull said that Mr. Eric McDougall had asked him to enquire whether the minutes contained any reference to the McDougall Plan discussed at the last Annual Meeting, when an assurance was given that the plan put forward would be investigated.

The Chairman ruled the question to be out of order.

The Annual Report. — The Annual Report was received on the motion of Mr. M. Super, seconded by Mr. E. C. McClelland.

Adoption of the Report.—Mr. Iliffe said he did not propose to spend much time dealing with the report, but there were several matters to which he would refer.

Membership.—The increase of 18 in the membership during the year was gratifying. There were now only 30 or 40 chemists in the whole of the State who were not Guild members. He hoped that the members would do everything they could to bring in those who were eligible.

District 10b.—District 10 was a very large district extending from Elsternwick to Sorrento and from Caulfield to Dandenong. It was numerically strong. A request had come from the Mornington section that they should have their own district. Permission had been given to these members to have their own meetings, and at the expiration of 12 months the question of granting the request would be considered. Mr. Iliffe said he was hopeful that they would then grant permission for permanently forming the new district as requested.

The Sub-committees.—All Sub-committees had done good work during the year. Particular reference should be made to the work of the Pricing Committee. (Applause). There had been regular monthly meetings of this Committee, and at times the members had worked until 2 a.m. before adjourning. Rank and file members had little idea of the amount of work being done for them by members of this and other Committees. He hoped that the members were satisfied with the lists that had been put out.

There had not been as much work for the Contract Dispensing Committee to do during the year as in previous years, but this Committee deserved praise for its part in bringing about the new arrangement with the dispensaries on a fee for service basis.

Repatriation Dispensing.—Accounts had never been paid as promptly as they were now being paid. All owed a great debt to Mr. Read and his staff for the efficient job they were doing in that direction.

Referring to the Public Relations Secretariat, Mr. Iliffe said he wished to pay a personal tribute to Mr. K. G. Attiwill, the Director. Every request from the S.B.C. for assistance and advice had met with a ready response. Mr. Attiwill had been particularly helpful in connection with country visits with advice concerning P.B.A. and other matters. He wished to record his thanks. (Applause).

The Merchandising Service was working extremely hard and had put thousands of pounds in the tills of

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members. This was a most efficient department, and he wished to pay tribute to the Manager, Mr. Ross.

"Gilseal News."—Mr. Iliffe said he wished to express appreciation of the devoted work of Mr. F. N. Lee, as Editor of "Gilseal News." It was, however, with regret that he announced that Mr. Lee, because of pressure of other duties, now felt obliged to relinquish this position. He thought the members should express their sincere thanks to Mr. Lee for the valuable work he had done in this connection. (Applause).

Mr. Scott's Return.—It was pleasing to have Mr. Scott back again with them after his visit to the United Kingdom and U.S.A. Mr. Scott was a tower of strength to pharmacy. The Federal Council had again re-elected him as Federal President, and his colleagues in Victoria hoped that he would long be spared to lead them through whatever troubled waters lay ahead.

Civic Honours.—It was pleasing to report that civic honours had fallen on a number of their members throughout the country. Reference had been made in the printed report to some of these honours, but it was doubtful if this was complete. It was always a pleasure to see that members were willing to do something towards the advancement of the district in which they lived. Mr. Iliffe appealed to members to forward information concerning civic activities and honours so that these could be duly noted.

Tribute to Staff.—Mr. Iliffe said he would be failing in his duty if he did not publicly express his thanks to the staff of the State Branch Office for their loyalty and efficient service throughout the year. In recognition of her services Miss Norris had been made Assistant Secretary. He wished to thank her for her continued loyalty and devotion to duty. Every member knew of the self-sacrificing efforts of their Secretary, Mr. W. F. Glover, who was a tower of strength to the movement. Mr. Glover worked far longer hours than any man should be called upon to do.

To Mr. Hornby also he wished to express his thanks for continued valuable work during the year.

Balance Sheet and Finance Statements.—Mr. N. F. Keith, Honorary Treasurer, at the request of the Chairman, referred to the financial statements for the year ended June 30, 1952. He pointed out that the Statement of Income and Expenditure showed a deficit of £1123. This was because rising costs got a bit ahead of the rising Guild subscription. He hoped that the position would be remedied by the end of the next year.

Mr. Lloyd moved, and Mr. Samuels seconded, that the Annual Report and Financial Statements be adopted.

Discussion.—Mr. S. Hull asked for information concerning proceedings of the D.A.T.C. and the Legal Trading Hours Association, which the Guild apparently was represented on. They had not been mentioned by the Chairman.

He suggested also that in addition to the names of the members of the Sub-committees being printed in the Annual Report, the names of the Presidents and Secretaries of the districts should be published.

The Chairman said he had attended meetings of the D.A.T.C. in the Federal sphere. That was why no reference had been made.

Mr. Hull: "Surely the rank and file are entitled to know what goes on?"

Mr. Iliffe: "That is for the Federal President to say."

Referring to the Legal Trading Hours Association, Mr. Iliffe said he did not attend the meetings. Nothing of sufficient importance to pharmacy had transpired to warrant special reference.

Mr. Hull then asked why 10b district had been split off for 12 months before being granted permission to form a separate district. Why had not Ashburton

been treated in the same way? Mr. Iliffe replied that there had been no need.

Mr. Super said he wished to emphasise the need for unified action throughout all sections of the Guild. He claimed that during the year different sections had not acted in unison, and in support of this contention, quoted examples. The advice of the Merchandising Section, he said, was entirely different from that of "Gilseal News" on the question of Stearns lines in Friendly Society Dispensaries in Victoria.

With regard to Merchandising, he felt more should have been said about this section. "Propain," he said, was heralded as a chemists' only line, yet it was now obtainable in dispensaries. Could somebody tell him how this line got into the dispensaries. He was sorry there was no reference in the report to Pharmaceutical Benefits, which was assuming a very serious aspect, but no doubt this was omitted in view of the fact that an address on the subject was to be given by Mr. Scott. In February last they had been promised a 2d. rise in dispensing fees, but when July came, the news that the dispensing prices for sulphadiazine were to be reduced came as a bombshell. The explanation given was entirely ridiculous. It might be all right for those with huge turnovers, but what about those with a turnover of less than £750 per annum. It was a very serious matter.

Mr. Super described the arrangements for the Pensioners' Medical Service as "the most scandalous thing that ever took place in the history of pharmacy." He had never sent in any of his prescriptions. He would prefer to give the medicines away to the poor old people rather than to send in the accounts and receive half of what they were worth. The negotiators had not sufficient vigour to stand up to the "gangsters in Canberra."

Mr. Thompson said he would like to reply to Mr. Super, who had referred to the Public Relations Secretariat. He felt that in four years there had not been one instance in which the policy of the Secretariat had been opposed to the policy of the S.B.C. in Victoria. Later on, if Mr. Super would give him details of what he alleged had taken place he would deal with the matter. As one who had been closely associated with the work of the S.B.C. throughout the year he would like to pay tribute to the organisation and the immense amount of work which had been transacted through the year. (Applause). It had been his privilege to accompany the State President on many country visits, and he could assure the meeting that the interests of country members were very close to his heart.

Mr. Thompson said he was not in agreement with the S.B.C. in relation to publication of details in price lists. His district was strongly of opinion that the cost price should be shown in the Patent Medicines List. The Pricing Committee considered that it was not advisable to do this, and the recommendation from his district had been rejected. The district had prepared another remit on the question for the annual meeting, but unfortunately this was not in time, and he had been requested to bring the matter before the meeting.

Mr. Thompson then moved that it be a direction to the Pricing Committee and that all future Patent Medicine Price Lists carry the retail and wholesale prices. The motion was seconded by Mr. R. T. Benton. Mr. Thompson set out a number of reasons in support of the motion.

Mr. R. B. Lumley opposed the motion, claiming that publication of cost prices would be an invitation to everyone to see them. Mr. Lee spoke in favour of the resolution. Mr. Lumley's remarks, he said, merely indicated why they should publish the wholesale price. Mr. McClelland, Chairman of the Pricing Committee, informed the meeting in detail of the Pricing Committee's objections to publication of the wholesale price.

Mr. Thompson said he thought that Mr. McClelland's defence was very weak. In his opinion it did not have any substance at all.

The motion was then put to the meeting and declared

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carried. Mr. Super called for a count of the hands, and this was taken, showing: In favour, 39; against, 15.

Election of Members of S.B.C.—The Returning Officer, Mr. W. F. Glover, explained that members representing districts having odd numbers were due for election this year. The following were the results of the elections:—

District No. 1.—Messrs. E. Scott and J. I. Richards.
District No. 3.—Messrs. S. M. Adams and F. L. Flint, with H. W. Lawrence and E. G. Leete substitute delegates.
District No. 5.—Mr. F. N. Lee, with Mr. U. S. Lucas substitute.
District No. 7.—Mr. W. J. Langtry, with Mr. K. Sleigh substitute.
District No. 9.—Mr. L. G. Rowbottom, with Mr. Aronson substitute.
District No. 11.—Mr. K. Hartley.
District No. 13.—Mr. J. J. Cocking, with Mr. Marks substitute.
District No. 17.—Mr. J. B. Robinson, with Mr. A. M. McFarline substitute.
St. Kilda District.—Mr. L. J. Gough, with Mr. H. Spigelman substitute.

Auditor.—The retiring auditor, Mr. R. H. Morrison, was re-elected for the ensuing 12 months.

Remit.—Mr. M. Super moved the following motion, notice of which had been given:—

> "That following the action of the Commonwealth Government in guaranteeing Australian National Airways that legislation will be provided to safeguard their investment, as distinct from administration by REGULATION, or DEPARTMENTAL REGULATION, the S.B.C. should submit to the Federal Council and press for their support in submitting to the Government proposals to obtain similar protection as that afforded A.N.A. in our SOCIAL CONTRACTS with the Commonwealth Government, and stress that any legislation shall be consistent with employers' obligations under the Arbitration Court Acts."

He said that he proposed to submit the motion formally. He felt it should have unanimous support. He was merely asking for the same protection for pharmacy as private enterprise in other directions was entitled to.

The motion was seconded by Mr. S. Hull and carried.

Vote of Thanks.—Before calling on Mr. Scott to address the meeting Mr. Iliffe expressed from the Chair the sincere appreciation of all those present for the services of the Ladies' Committee in providing refreshments after the meeting.

MR. SCOTT'S ADDRESS.

"The Latest Developments in P.B.A. and P.M.S."

Mr. Scott opened by dealing with the reduction in price of Sulphadiazine, which had been removed from the operation of the Thomas table. Ninety-two per cent. of Sulphadiazine, he said, was prescribed in lots of 50 tablets or less. When the ceiling on expenditure of drugs was exceeded in 1951 the Commonwealth looked for some way to reduce the cost, and the logical thing was to review the formula for dealing with drugs of high velocity turnover, such as Sulphadiazine.

The Pharmaceutical Statistics Bureau, which advised the Federal Council on matters of this kind, had recommended removal from the operation of the Thomas table. Alternatives which were under consideration by the Government would have been more costly to chemists.

Mr. Scott then dealt with the matter which he said

had cost much concern throughout Australia — namely, the removal of items from the Pharmaceutical Benefits List without due notice. Three weeks ago, he said, a member of the Executive and of the Pharmaceutical Statistics Bureau, had interviewed the Commonwealth authorities. They had protested against lines being taken off the list without proper notice to chemists. They expressed the opinion that country members needed three or four months' notice. They were met with a refusal to accept the proposals which were put up. The best that could be done was to get an assurance that the Federal Office would be notified before the tenth of each month of impending removals and alterations in prices. That meant that members would get about three weeks' notice. It was not enough.

Objection had been lodged also with regard to Distaquane. Objection had been lodged against the sudden summary reduction in price of this item as from August 1. It was pointed out that chemists could not get rid of stocks on the day of the fall in price. The Minister for Health referred to an Officer of the Department, who admitted that a mistake had been made, whereupon the Minister intimated that some compensation was due to pharmacy. He instructed his deputies to write to two firms concerned on the subject, and gave a promise that a similar happening would not occur.

Mr. Scott said that the thing they were really worried about was the policy of medical practitioners obtaining emergency stocks from wholesale houses. This matter had been fully discussed and a solution of the problem was likely.

Mr. Scott said that the Pensioners' Medical Service had come under tremendous fire throughout the whole of the Commonwealth. To his mind it was a very contentious item. Members must get out of their minds, he said, that the Government forced the averaging scheme on the Guild. That system was recommended by the Statistical Bureau. They contended that overall nobody would lose. With every averaging scheme it was asserted you must take the highs and the lows. Mr. Scott said, however, it was obvious that a chemist who was in a high category for any length of time must show a loss.

The Federal Council had met in an emergency meeting recently and had decided unanimously that the Government be asked to dump the averaging system and adopt a pre-pricing scheme. The Minister had agreed to such a scheme. His experts said they agreed in principle, but departmentally it would be a most difficult undertaking. The Federal Council representatives had informed the Minister that if the averaging scheme were insisted upon he would get wholesale resignations. The chemists should be paid according to the goods supplied.

Mr. Scott said the amount involved, however, was not colossal. The total amount expended on the P.M.S. for the year was a quarter of a million.

Mr. Scott said the chemists were parties with the Government in three contracts — Pharmaceutical Benefits, Pensioners' Medical Service, Repatriation Dispensing.

The Guild had just concluded a new contract with the Repatriation Commission that would show a distinct rise in the professional fees for chemists.

Mr. Scott said that he had little doubt that sooner or later an attempt would be made to cut down dispensing fees all round. The Guild, however, would resist any such attempt. Organisation and unity were more essential than ever, and as an example, Mr. Scott pointed to conditions in Great Britain where the Scottish chemists succeeded in holding the 33⅓ per cent. on cost, whereas their English confreres were cut down to 16⅔ per cent. under the National Health Service in that country.

Under P.B.A., said Mr. Scott, they had urged that Committees be set up to go into cases of technical and other breaches of the Act. Such Committees had been set up in each State, but unfortunately had met only once. Three or four cases had been submitted to them, but that was the last the members had heard. They had taken that matter up with Sir Earle Page, and put it to him that if the Committees existed pharmacy wanted all matters of breaches of the Pharmaceutical Benefits Regulations to come before them as the prerogative of the Committee. Sir Earle had intimated that this matter would be dealt with in consolidating the Acts shortly.

In Australia, Mr. Scott pointed out, 27 per cent. of Government funds was expended on social services. In the United Kingdom 25 per cent., and in New Zealand 40 per cent., and in the United States 8 per cent.

It was essential, he said, in all of the schemes that the family chemist functioning as a private individual should survive; and that he should be adequately recompensed for his service, and that professional standards should be upheld. (Applause).

Voluntary Health Insurance.

Mr. Attiwill said that public relations was simply "good business, efficiently performed." Public relations was a matter for individual as well as collective responsibility; if pharmacy's relations with the public were bad, nobody could disguise that fact from the public. Under the Canberra policy of Government planning and private enterprise in the health services of the Commonwealth, pharmacy must demonstrate its capacity and willingness to give the public a better pharmaceutical service than the Government could provide through health clinics. While retail chemists could do that, the public would prefer them to the regimented, salaried-service pharmacists attached to a health clinic.

Dealing briefly with the question of disciplining chemists who had erred in carrying out their obligations to the Government, Mr. Attiwill said that

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chemists must live up to their contract with the Commonwealth, not down to it.

The Page scheme of hospital and medical benefits insurance on a voluntary basis offered another opportunity to retail pharmacy to establish itself as a focal point in the community in a rapidly changing social structure. This kind of self-help scheme, linking the Government, the doctor, the chemist, and the public, was a world-wide answer to socialistic dictatorship, regimentation, clinics, and the degradation of private enterprise into a salaried service of slop dispensing. It was for the chemists themselves to demonstrate whether they would survive under freedom of choice in health services.

Mr. Attiwill said that the various parts of what was called the Page scheme (pharmaceutical benefits and hospital and medical benefits insurance) were together expected to subsidise about 40 per cent. of the community's annual expenditure of about £80,000,000.

The Federal Council of the Guild had recommended to the State Branches that they should advise chemists to support the medical benefits funds by becoming agents. The Hospital Benefits Association of Victoria, for which many chemists were agents, expected shortly to operate a medical benefits fund, and he urged chemists to become agents for it. At present, the H.B.A. had 400,000 members in Victoria. When certain official formalities had been completed, the H.B.A. would launch its medical benefits scheme.

Mr. Attiwill said that he had emphasised to the H.B.A. officials that chemist agents and the public should be given a clear explanation of the system of enrolment and premium payment. This publicity work should be undertaken by the H.B.A. as soon as possible, and the Guild would help. The object was to prevent a repetition of the confusion which occurred last January after the Page hospital benefits scheme had been launched through H.B.A. and other similar funds throughout Australia.

Very soon, Mr. Attiwill added, the H.B.A. would announce the details of its medical benefits insurance scheme, and it would be seen that the benefits were in line with those of other funds throughout Australia. With the State President (Mr. Iliffe) and the Secretary (Mr. Glover), he was in close touch with the director of the H.B.A. (Mr. Lewis), and steps would be taken soon to improve the liaison between H.B.A. and its chemist agents through the Guild.

Questions.

Following the addresses by Mr. Scott and Mr. Attiwill the Chairman invited questions from the audience.

Mr. Hull asked whether there was any provision for payment of extra benefits by taking out additional units of cover with the Hospital Benefits Association.

Mr. Attiwill replied that under the Benefit Associations' Bill the H.B.A. could not do this. Possibly they would make efforts to amend their rules.

Mr. Super asked Mr. Scott whether he would be prepared to put forward the remit appearing on the agenda for consideration by the Commonwealth when the Pharmaceutical Benefits Act was being amended.

Mr. Scott said it would be necessary of course for any such remit to go on to the Federal Council through the S.B.C.

A member: "I gather we can refuse to dispense Pensioners' Medical Service prescriptions and still maintain the P.B.A.?" Mr. Scott: "Yes."

A member: "Are any steps being taken towards checking the practice which exists at the moment of doctors selecting one chemist in an area to do their P.B.A. work?" Mr. Scott: "That is a question which arises all over Australia. There is no practical way of getting over it. The Department deplores it, and we deplore it, but we cannot find the remedy."

Mr. Super asked if steps could be taken to ensure that "Propain" would be withdrawn from dispensaries. Mr. Ross, later on in the evening, intimated that if advice was sent to him as to dispensaries displaying "Propain" suitable action would be taken.

Mr. R. B. Lumley submitted seven questions:—

(1) Why was not a general meeting held to discuss Government medicine when a remit from his district asked for such a meeting?

Mr. Iliffe replied that the requisition could not be met because it was not framed in accordance with the requirements of the constitution.

(2) To Mr. Scott: Was the promise in regard to notice prior to price reductions for P.B.A. items verbal or written into the contract?

Mr. Scott: Verbal, but it will be incorporated in a written contract.

(3) Had anything been done in regard to the proposal that a 1d. in the £1 should be deducted from chemists' accounts to form a pool for compensating those whose P.M.S. prescriptions showed a loss?

Mr. Scott replied that the matter had been discussed with Canberra. Such an arrangement could not be proceeded with unless every single chemist individually authorised the Commonwealth to make the deductions. That did not seem practicable.

(4) How can the Bureau justify price averaging?

Mr. Scott replied that the Federal Council had taken all the measures it could in regard to this matter.

(5) Some items on the P.B.A. list are not always available and it is not economical to dispense another line at the basic price. Can we ensure that drugs available are supplied without loss?

Mr. Scott said the Pharmaceutical Officer in Victoria has said that it is his practice to ascertain if the item is available. If not the one at the next nearest price is accepted.

(6) Can the provision relating to the signing on the back of prescriptions be removed?

Mr. Scott: No. We have pressed strongly for elimination of that requirement, but the Department will not grant it.

(7) Was the McDougall Medical Scheme considered when the Pensioners' Medical Service was brought in?

Mr. Scott: I cannot answer. I was not there.

Mr. H. A. P. Emonson asked where the authorities got the P.B.A. basic price and who were the firms willing to supply "junk" at the basic price?

Mr. Scott said that was one of the secrets of Canberra.

This concluded the business of the evening, and after a vote of thanks to the speakers, Messrs. Scott and Attiwill, had been moved by Mr. H. A. Braithwaite and seconded by Mr. V. G. Morieson, the members adjourned to the Museum for refreshments.

ANNUAL REPORT OF VICTORIAN BRANCH.

The Twenty-fourth Annual Report of the Victorian Branch of the Guild was presented at the Annual Meeting of the Branch, held at the College of Pharmacy, Melbourne, on September 3, when the State President (Mr. W. R. Iliffe) occupied the chair.

Part of the introduction in the President's report reads: "One of the most pleasing features of the year

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and one that has heartened me personally in my own work is the outstanding loyalty of members to those who labour on their behalf. Quite apart from what we are told when visiting districts, we hear reports from manufacturers and wholesalers of the power that the Guild now has, and the ready reaction of members to our requests and suggestions. A continuance of this situation can only mean that we shall go from strength to strength, and must become a great force in the business world."

Membership is growing in numerical strength, and at the date of the report the total stood at 868 members. Two new districts were opened during the year, one at Ashburton, taking in Glen Iris and part of Hartwell, and the other along the bayside from Cheltenham to Sorrento, taking in the Mornington Peninsula.

The Pricing Committee and the Contract Dispensing Committee have continued their good work of earlier years. The production of the Patents Price List was a large undertaking, and noteworthy in the activities of the Contract Dispensing Committee for the year was the introduction of the "Fee for Service" system for Lodge work.

A new Committee, namely The Trade and Commerce Committee, was set up during the year, and has been able to concentrate on the many problems that arise dealing with adequate margins of profit on new lines. The Committee works in close liaison with the Merchandising Section, which has continued to give the Branch excellent service. Members are urged to insist that all new lines should be placed before the Merchandising Section before stocks are bought.

The Victorian section of Repatriation checking work is now handled in a separate department under the control of Mr. S. J. H. Reid.

Of the Public Relations Secretariat the report states: "This section of Pharmacy continues to demonstrate more and more the value of a Public Relations Secretariat."

District meetings have always been an important feature of Guild activities in Victoria, and the report states that the Victorian Zoning System is the most successful method of getting members together and of imparting information, receiving opinions and transmitting them back to the S.B.C.

Congratulations are extended to Mr. Eric Scott on his re-election as Federal President, an office he holds with dignity and honour.

Other items referred to in a compact report include the following:—

1. The repeal of Regulation 77 (2) of the Food and Drugs Regulations of Victoria.

2. The successful conversion of the £10 loan to the Merchandising Service. Following this conversion the report states: "The Federal Guild can now look forward to a building in which to house itself in a manner befitting the organisation. . . . We look forward to seeing that building during the next 12 months."

3. The introduction of the Government Hospital scheme and the part being played in the administration of that scheme by the Hospital Benefits Association, which has acknowledged in a letter of thanks the support of the Association from Pharmacy.

In the list of attendances at meetings of the State Branch Committee, 24 names are noted. Several committeemen attended all of the 11 meetings held during the year, and the lowest attendance was four meetings out of the 11.

In his concluding references, Mr. Iliffe pays tribute to the work of the office staff and to the ready response of members to any requests he has made.

Financially the year was a difficult one, resulting in a deficit of £1123/7/3 for the year. The Balance Sheet shows total assets as £4149/10/2, the total of accumulated funds being £2338/4/9.

WESTERN AUSTRALIA

GUILD S.B.C. MEETING.

The State Branch Committee of the Western Australian Branch of the Guild met at 51 King street, Perth, on September 9, at 8 p.m.

Present.—Messrs. G. H. Dallimore (Chair), R. I. Cohen, G. Allan, R. Dalby, J. Skeahan, W. Lewis, R. Healy, A. Baxter and J. Bodkin.

Chlorodyne and Iodine.—A report had been received from the Pharmaceutical Council that the sale of Chlorodyne and Iodine was being investigated.

Labels.—A reply has been received from Federal Office reporting that blocks and stereos of "Gilseal" Labels were unavailable, but Federal Office had made an offer to purchase various stocks of labels they are holding.

P.B.A. and P.M.S.—P.B.A. and P.M.S. were discussed again at length. It was finally agreed that the points raised were common throughout Australia, that they had been discussed many times, that the Federal Executive were well aware of the anomalies that existed, and that Federal Office were continually negotiating to have such anomalies removed.

Guild Lines.—Recommended that the Secretary write to Federal Office for a determination as to whether, when only one firm packs a "Gilseal" line, it is permissible to allow the pack to be branded with individual chemists' names.

Remit to Federal Council.—Resolved that the following remit be forwarded to Federal Council:—

"That in any further determination of Guild Subscriptions consideration be given to the use of an amended scale either based on turnover or wages."

Addressograph.—Resolved that the printing of envelopes or the purchase of the Addressograph be left in the hands of the Secretary and the Executive.

Trade and Commerce Report.—Mr. Allan presented his report from the latest meeting of the Trade and Commerce Committee:—

(1) That the Sugar of Milk position is still being investigated, and it was suggested that the wholesalers should be given an option of packing it if it is possible to proceed under the "Gilseal" pack.

(2) That Messrs. John Hare & Co. be communicated with seeking information as to whether "Steadiflow" Baby Bottles are guaranteed heat resistant.

(3) That the President has been in contact with the A.M.P., and had presented a strong case for a change in practice of giving discounts in the canteens. He is awaiting definite results before asking for further appropriate action.

(4) That Federal Office be written to asking them to investigate big discrepancies in "Phenazone" prices.

(5) That Mr. White's resignation from the City Zone had been accepted with regret.

(6) That Mr. Earl, Sales Manager of H. C. Sleigh Ltd., had conferred with the Chairman and Mr. Dalby, and that the number of "Propain" Windows would be governed by the State sales.

(7) Prescription Proprietaries List: Recommended that the items deleted from the P.P. List and added to the Patents List be published in the "Gilseal News."

The meeting closed at 11.30 p.m.

Legal

P.B.A. CHARGES AGAINST NEW SOUTH WALES CHEMISTS

At Wauchope (N.S.W.) Court of Petty Sessions, on July 30, before Mr. L. Stapleton, S.M., Bennett Bennett Lane and Maxwell McCarthy, trading as Lane & McCarthy, were charged under the Pharmaceutical Benefits Act 1947-1950 for presenting to the Department incorrect documents upon which claims were made for payment for prescriptions dispensed under that Act.

The case arose out of the supply of the drug Chloromycetin to patients during the epidemic of whooping cough in the months of November, 1951, to January, 1952.

It was alleged that during that epidemic the defendants supplied large quantities of the drug upon prescriptions from the doctors, but as such drug was in short supply and there was a heavy demand for it, the complete prescriptions could not be fulfilled in the cases of two patients, though they were told the balance would be given to them as soon as the defendants received further supplies.

The claim forms were, however, sent to the Department in anticipation of the defendants supplying the balance of the prescriptions which, as it transpired, were not required. In one case 208 capsules were prescribed and 80 supplied; in another 240 prescribed and 168 supplied, but claims were made for the full number stated in the doctor's prescriptions.

The prosecution also alleged that some quantities of the drug had been returned, taken back into stock, reissued, and then claimed for. Defendants, in one instance, notified the Department and, in fact, sent down their cheque to cover discrepancies, but although no moneys had been paid by the Department on the claims, these forms were, in fact, incorrect at the time they were despatched.

A plea of guilty was entered in each instance.

On the first charge each defendant was fined £10, witness' expenses £14/14/-, professional costs £5/5/-. On the second count each was fined £15 and 11/- costs.

Mr. Jack O'Brien, of Counsel, instructed by the Commonwealth Crown Solicitor, appeared for the Crown; and Mr. D. S. Hicks, of Counsel, instructed by Mr. J. M. Glass, for defendants.

P.B.A. PRESCRIPTIONS ALTERED

South Australian Chemist Fined.

Drennan Paul Warnecke, aged 25, of Marion road, Plympton Park, S.A., was fined £15 with £5/15/- costs in the Adelaide (S.A.) Police Court on September 9 on a charge of having altered medical prescriptions contrary to the Pharmaceutical Benefits Act.

Warnecke admitted having presented a false prescription to an officer of the Health Department.

Mr. C. R. Colquhoun, prosecutor for the Commonwealth Crown Solicitor, said that Warnecke had admitted having made alterations to 12 prescriptions.

On May 6 Warnecke dispensed a medical prescription for four bottles of free medicine.

Although he supplied the patient with the bottles, he believed the limit under the Act was only two bottles, and charged only for two bottles, with the result that he was £4/10/- out of pocket.

It was stated that Warnecke, in order to reimburse himself, had altered the 11 prescriptions and obtained additional medical benefits.

The prosecutor said it was not thought that Warnecke's offences were a scheme to obtain money from the department.

BREACHES OF WESTERN AUSTRALIAN POISONS ACT

Norman Stanley Craven, of Craven's Pharmacy, Perth, was fined £20 with £8/16/- costs in the Perth (W.A.) Police Court on August 19 for having sold a restricted drug without a prescription from a doctor or dentist.

The Pharmaceutical Council of Western Australia, which instituted proceedings, alleged that Craven had omitted to comply with the provisions of the Pharmacy and Poisons Act and Regulations in regard to the supply of a tablet containing Beta Aminopropylbenzene other than on the prescription of a medical practitioner or dentist.

For the prosecution it was stated that on May 1 a woman went to Craven's and asked for something for a "hangover."

A woman assistant, after consulting one of the chemists, gave the customer a tablet.

The woman returned the next day and obtained another tablet.

Craven was not a registered chemist, but because he was in business when the Act was brought in, he was permitted to carry on. Counsel said the Pharmaceutical Council was concerned about the number of chemists who were getting into the habit of selling drugs without prescriptions, and considered the matter to be serious.

For the defence Craven's counsel said his client was not in the pharmacy when the offences occurred. The female staff had instructions not to deal with the drug side of the business. The chemist who told the assistant what to take for the hangover thought it was for the assistant.

Trade Notes

Burroughs Wellcome & Co. (Australia) Ltd. advises that Mr. M. W. Ford has been appointed to the Representative Staff, and will take up duties in North Queensland early in November.

Burroughs Wellcome & Co. (Australia) Ltd advises that a Melbourne office was opened as from September 1, 1952. The address is Chamber of Manufactures Building, 312 Flinders street, Melbourne (telephone MU 2193).

BRITISH SCHERING LTD.

The above company has advised that the prices of the majority of its products will be reduced as from October 1, 1952.

A new price list has been printed, and copies may be obtained on application to the company's agents, Messrs. Young and Fennell, G.P.O. Box, No. 1573, Sydney, N.S.W.

MAY AND BAKER P.B.A. ITEMS.

The Melbourne Branch Office of May and Baker (Aust.) Pty. Ltd. has drawn attention to two errors in the list of "Proprietary Preparations Included in the Pharmaceutical Benefits List" as published in our issue of June 30, 1952. They are:—

1. "Neptal" Item No. 88a. Due to a printing error this appears incorrectly as "Heptal."

2. The second concerns the omission of Sulphatriad Tablets, Item No. 168.

PARKE, DAVIS & CO. LTD. MAKES PRESENTATIONS TO STAFF FOR LONG SERVICE.

Parke, Davis & Co. Ltd., Sydney, held a very interesting ceremony at its Sydney office recently. Forty-five members of the company's staff were presented with a gold watch on having reached 25 years or more service with the company.

The total staff is 431, so that the 45 employees with 25 years or more service amount to nearly 10 per cent. of the staff, which is an excellent average.

The function was presided over by Mr. T. J. White, General Manager, who stated that he was pleased that during his regime the President and the Director of Overseas Operations had seen fit to agree that those who reached 25 years or more service should have something tangible and emblematical of those years of service. On behalf of the President and Director of Overseas Operations of Parke, Davis & Co. Ltd., Mr. White then presented each member of the staff entitled to it by their years of service with a gold watch.

Amongst the male staff Mr. A. Pocock had the longest service, with 40 years 9 months to his credit. Of the female staff Mrs. Abbott heads the list with 38 years 9 months' service to her credit.

SCHERING PTY. LTD.—NEW PRICE LIST.

We have received from the office of Schering Pty. Ltd., 52 Carrington Street, Sydney, a copy of the new price list of the company, dated September 1, featuring products of Schering, A. G., Berlin.

Several new preparations have been listed and are available for immediate delivery as follows: Ertuban (Isonicotinic acid hydrazide); Primoteston, a new long-acting testosterone preparation, viz., Testosterone oenanthate; Methylandrostenediol, a new androgen without virilizing properties, being of particular value in the treatment of carcinoma. In addition, several new preparations, including Granocol and Sodexol, will appear in the near future.

The prices of the company's "Talecid" preparation were reduced as from September 1, and the new prices are as follows:—

Talecid	Wholesale Price to Chemists
20 tabs of 7½ gr.	6/-
100 tabs. of 7½ gr.	23/-
500 tabs. of 7½ gr.	95/-

NEW FACTORY FOR BICKFORDS.

The newspapers recently carried a report that A. M. Bickford & Sons Ltd. had received authority from the Capital Issues Board to raise £175,000 for a new factory and laboratory in West Croydon.

The Managing Director, Mr. P. Furler, said that work on the new building would start immediately, and it was hoped that production would be commenced in about 18 months. The new laboratories would produce medical, hospital and pharmaceutical drug requirements, and would enable the company to increase its output of penicillin preparations.

Overseas visitors to Centenary Convention of American Pharmaceutical Association, Philadelphia, U.S.A., on visit to laboratories of Parke, Davis & Co., Detroit.
From left: Hugh N. Linstead, M.P., Secretary, Pharmaceutical Society of Great Britain; Charles Bell (N.Z.); R. C. Rutter, Pharmaceutical Society of Queensland; W. R. Jeeves, Vice-President and Director of Overseas Operations, Parke, Davis & Co.; Steve Bauer, Parke, Davis & Co., Detroit; W. R. Cutler, President, Pharmaceutical Association of Australia and New Zealand; John Tristram, President, Pharmaceutical Society of Great Britain.

Long service staff of Parke, Davis & Co. Ltd.

NEW FAULDING DIRECTOR.

F. H. Faulding & Co. Ltd. announces that Mr. R. T. Patterson, A.U.A., D.B.A., M.P.S., has accepted an invitation from the Board of Directors to become a Director of the Company. The present Board consists of Mr. A. F. Scammell as Chairman, Messrs. R. G. and G. V. Scammell and M. R. Lodge as Directors, and Messrs. F. A. Yeates and W. F. Scammell as Associate Directors.

Mr. R. T. Patterson.

Mr. Patterson was born in Adelaide in 1917, and was educated at Scotch College and the University of Adelaide. At the University Mr. Patterson obtained his Diploma as an Associate of the University of Adelaide in Pharmacy. Immediately after completing his University career Mr. Patterson joined the Royal Australian Navy, and between 1940 and 1946 he served in the Atlantic, the Arctic, the Mediterranean and the Islands. He attained the rank of Lieutenant-Commander, and had charge of a flotilla of special service Reconnaissance Department ships.

After being released from the Navy in 1946 Mr. Patterson joined the staff of Allen & Hanburys Ltd., at Ware, in England, and during his four years with that company he obtained his Diploma in Bio-Chemical Analysis and an Associateship in Chemical Engineering from the University of London.

During his service with Allen & Hanburys Ltd. Mr. Patterson was in charge of the Manufacturing and Biochemical Divisions. In 1950 Mr. Patterson returned to Australia and joined the staff of F. H. Faulding & Co. Ltd., Adelaide, as Laboratory Manager of its Southwark Laboratories. In this latter capacity Mr. Patterson is responsible for biochemical manufacturing research and development, as well as methods of production.

FAULDING'S EXHIBIT AT MEDICAL CONGRESS.

The stand presented by F. H. Faulding & Co. Ltd. at the Medical Congress in Melbourne during August, was of a modern unit construction and incorporated two tiers of rounded plate glass shelves on which ethical preparations were displayed. The pale blue of the exhibit was a perfect background for the dark and light blue packages of Faulding ethicals, such as Vitaphen-Pentone and the Penicillin preparations.

Mr. E. H. Phillips, D.B.A. (London), F.C.S., head of the company's medical service division, and Mr. P. M. Wade, B.Sc., of this Division, in Victoria, who were interviewing visitors to the exhibit, reported great interest in the company's latest release, the new stable aqueous procaine penicillin suspension—Aquacillin. The Faulding disposable syringe pack for penicillin was also displayed.

Terramycin (Pfizer) appears destined to play as big a part in Australian medicine as it is currently playing in the United States.

The beautifully printed and illustrated book on Terramycin, which set out the comparative values of Penicillin Streptomycin and Terramycin against a wide range of gram negative and gram positive organisms, together with concise up-to-date clinical references, was welcomed by the doctors as a most valuable addition to their surgery bookshelf.

P.P. CARD—CORRECTION (VIC.).

Card No. A40, issued in May, 1952, dealing with "AVAGAL" shows incorrectly against the heading "Drug Regulations" that the product is subject to the Specified Drugs Regulations in Victoria. "Avagal" is not subject to the Specified Drugs Regulations.

'Cetavlon' brand of **Cetrimide B.P.** contains approximately 80% of cetyltrimethylammonium bromide. It is a voluminous, white or cream, free-flowing powder having a faint odour and bitter taste. It is readily soluble in water and alcohol, solutions having a high surface activity and exhibiting powerful detergent and bactericidal properties. When shaken, the solution produces a prolific foam.

'Cetavlon' is a cationic detergent, the alkyl radicle of its molecule carrying a positive charge. Solutions are therefore incompatible with soap and similar anionic detergents, and also with alkaline hydroxides.

In solution, 'Cetavlon' is a powerful detergent and bactericide. It has no injurious action on the intact skin or on the raw surfaces of wounds and burns. Tests have shown that the bacteria normally present on the skin are readily removed by the application of 'Cetavlon' solution. It is especially active against Gram-positive organisms, e.g., staphylococci and streptococci, and, to a less degree, also against Gram-negative organisms, e.g., Bact. coli.

'Cetavlon' is usually employed as a .1% solution which may be easily and rapidly prepared by shaking up the powder in boiled or distilled water. Alternatively, 'Cetavlon' Concentrate may be used. This contains 20% of 'Cetavlon' and only needs dilution. 'Cetavlon' is also employed in alcoholic solutions which facilitate its penetration, and a 0.5% solution (tinted red) is available. Another form is 'Cetavlon' Jelly—a local application for sterilising and protecting the skin.

'CETAVLON'

BRAND OF CETRIMIDE B.P.

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both Pharmaceutical and Industrial grades, have been extensively used in industry for many years. The process of manufacture employed ensures the maintenance of desirable characteristics such as chemical purity, fineness, whiteness and physical uniformity.
The different varieties include:

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in powder and bulk. In powder form it is specially suited for the manufacture of toilet powders, tooth powders and pastes, and as a filter for various essences.

LIGHT CALCINED MAGNESIA

is well known for its high uniform quality. It is used in the compounding of medicines.

LEVISSIMA CALCINED MAGNESIA

is an extremely lightweight grade of material very suitable for the manufacture of Cream of Magnesia.

PONDEROUS CARBONATE OF MAGNESIA

is similar except in bulk to Light Carbonate. It is used in the compounding of medicines, also in stomachic preparations.

HYDRATE OF MAGNESIA

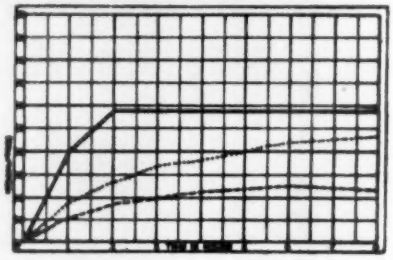
is used in the manufacture of milk of magnesia, also in toothpaste. It conforms to B.P. requirements.

PONDEROUS CALCINED MAGNESIA

is used for the compounding of medicines in much the same way as Light Calcined Magnesia, but, of course, it is less bulky.

MAGNESIUM TRISILICATE

Pattinson's Brand Magnesium Trisilicate is a synthetic compound corresponding in chemical composition and constitution to natural sepiolite. It slowly neutralises weak acids such as occur in the stomach. An overdose is harmless. The graph below shows that in the case of Magnesium Trisilicate neutralisation is retarded and prolonged, a dose continuing its action during the whole of the normal period between meals.



In the graph

——— C.C.'s 0.1% methylene blue absorbed by 1 gramme Magnesium Trisilicate (dried at 100 deg. C.)

..... C.C.'s $\frac{N}{10}$ Hydrochloric acid neutralised by 1 gramme Magnesium Trisilicate (dried at 100 deg. C.)

– – – C.C.'s $\frac{N}{20}$ Hydrochloric acid neutralised by 1 gramme Magnesium Trisilicate (dried at 100 deg. C.)

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an emulsion, in bulk and in patented process, that ensures an absolutely pure product of regular composition, whilst viscosity can be varied to suit bottles. Pattinson's Brand is prepared by an improved method to customers' requirements. In addition to its virtues as an Antacid, Pattinson's Brand Cream of Magnesia can be used as a mild laxative; is also an excellent liquid dentifrice. A sample bottle (12-oz. size) FREE on request.

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	After dilution	2+	0
$\frac{S}{2}$	Before dilution	3	0
	After dilution	3	0
$\frac{S}{4}$	Before dilution	3	1
	After dilution	2+	1+
$\frac{S}{8}$	Before dilution	3	2
	After dilution	3	2
$\frac{S}{16}$	Before dilution	3	2
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The Ointment is issued in collapsible tubes of $1\frac{3}{4}$ oz. (approx.); the Powder in sprinkler-top containers of 2 oz. Literature available on request.

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